City of Carlsbad

Engineering Standards

Volume 4
Storm Water Standards Manual

2008 Edition

CITY OF CARLSBAD
ENGINEERING STANDARDS

TABLE OF CONTENTS

VOLUME 4

STORM WATER STANDARDS MANUAL

REVISIONS/ADDENDUM		
CHAPTER/ PAGE/DWG.	**ITEM**	**REVISION DATE**

Section 1
STORM WATER STANDARDS MANUAL INTRODUCTION

This manual was prepared in response to the 2007 update to the California Regional Water Quality Control Board San Diego Region Order No. R9-2007-01, NPDES No. CAS0108758 Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority (Municipal Permit).

To accommodate the new Municipal storm water requirements, the City's Storm Water Standards were revised and revamped to: (1) accommodate the requirements of the updated Municipal Permit; (2) consolidate construction BMP standards into one location; (3) clarify existing standards and incorporate the new standards; and, (4) incorporate the requirements of the General Construction Permit, the General Linear Utility Permit and the General Industrial Activity Permit. The new manual will, when completed, consolidate all storm water BMP standards for post construction, construction and business activity requirements into one comprehensive manual entitled the "City of Carlsbad Storm Water Standards Manual" hereinafter referred to as "Storm Water Standards Manual".

The new Storm Water Standards Manual is comprised of four primary sections as follows;

1. Section 1 – Introduction
2. Section 2 – Storm Water Management Plan (SWMP) Standards includes standards and requirements for the preparation of permanent post construction BMPs including post construction inspection and inventory maintenance requirements. This section is based upon the Copermittees' revised interim model SUSMP document.
3. Section 3 – Construction Storm Water Pollution Prevention Plan (SWPPP) Standards – includes standards and requirements for the preparation of a Construction SWPPP in accordance with the Municipal Permit, General Construction Permit and General Linear Utility Permit.
4. Section 4 – This Section is currently reserved for the Business Activity Storm Water Pollution Prevention Plan (SWPPP) Standards.

The Storm Water Standards Manual is intended to be used at all phases of the development process. The manual also has application to City Capital Improvement Program development process.

This page intentionally blank

Section 2
Standard Urban Storm Water Mitigation Plan (SUSMP)
Table of Contents

Appendices:

2.1 STANDARD URBAN STORM WATER MITIGATION PLAN (SUSMP) INTRODUCTION

2.1.1 Standard Urban Storm Water Mitigation Plan Organization

This plan provides information to project applicants on compliance with the permanent storm water quality requirements for development projects in the City of Carlsbad. This plan guides the project applicant through the selection, design, and incorporation of storm water BMPs into the project's design plan.

Section 2.1, "Introduction," describes storm water pollution background information and legal or regulatory requirements associated with storm water pollution control.

Section 2.2, "Project Review & Permitting Process," outlines the project plan review and approval process for discretionary actions for development projects. Applicants should use Section 2.2 as the roadmap to navigate through this plan and ensure storm water requirements are incorporated into their projects. The following sections provide technical information necessary to incorporate the storm water requirements in the review process outlined in Section 2.2.

Section 2.3, "Permanent Storm Water BMP Selection Procedure," lists the permanent storm water BMP requirements, which are organized in a progression intended to dovetail with a typical project planning and design process and maximize storm water protection while minimizing project costs.

Section 2.4, "Implementation & Maintenance of Requirements," describes how implementation and maintenance of permanent BMPs must be assured prior to discretionary approval. This section provides a process and requirements for executing a maintenance agreement with the City.

The Appendices to the Standard Urban Storm Water Mitigation Plan contain information either necessary or designed to provide guidance in completing the storm water requirements in this plan.

2.1.2 Background

Urban runoff discharged from municipal storm water conveyance systems has been identified by local, regional, and national research programs as one of the principal causes of water quality problems in most urban areas. The City of Carlsbad's storm water conveyance system, which collects runoff from our streets, rooftops, driveways, parking lots, and other impervious areas, flows to our beaches without receiving treatment (our storm water conveyance system is separate from our sanitary sewer system). Urban runoff potentially contains a host of pollutants like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, associated wildlife, and public health. Urban runoff pollution is not only a problem during rainy seasons, but also year-round due to many types of urban water use that discharge runoff (dry weather flow) to the storm water conveyance system.

Land development and construction activities significantly alter drainage patterns and contribute pollutants to urban runoff primarily through erosion and removal or change of existing natural vegetation during construction, and the creation of new impervious surfaces, such as parking lots, which often permanently contribute pollutants throughout the "use" of the project site. When homes, work places, recreational areas, roads, parking lots, and structures are built, new impervious areas are built- creating the potential for an impact to water quality. The natural landscape's ability to infiltrate and cleanse storm water and urban runoff is "capped" by the impervious surfaces. As impervious surfaces increase, water that normally would have percolated into the soil now flows over the land surface directly to downstream wetlands, creeks, and eventually the Pacific Ocean. Accordingly, increases in impervious cover can increase the frequency and intensity of storm water flows. Second, new impervious surfaces often become a source of pollutants associated with development, such as automotive fluids, cleaning solvents, toxic or hazardous chemicals, detergents, sediment, metals, pesticides, oil and grease, and food wastes. These pollutants, which are often temporarily captured on impervious surfaces, are transported to the storm water conveyance system by storm water and urban runoff. The pollutants flow untreated through the storm water conveyance system and ultimately into our creeks, rivers, beaches, and ocean. With the growing concerns of urban runoff and storm water pollution, local, state, and federal agencies devised

regulations requiring development planning and construction controls to treat storm water-related pollution from new development projects before it reaches any receiving waters.

Order R9-2007-0001 was issued on January 24, 2007 to the City of Carlsbad, the County of San Diego, the San Diego Unified Port District, the San Diego Regional Airport Authority, and 17 other cities in the region by the San Diego Regional Water Quality Control Board (Regional Board), which requires the implementation of storm water regulations addressing storm water pollution issues in development planning and construction associated with private and public development projects. Specifically, development projects are required to include storm water best management practices (BMPs) both during construction, and in the projects permanent design, to reduce pollutants discharged from the project site, to the maximum extent practicable.

The primary objectives of the Storm Water Standards requirements are to: (1) Effectively prohibit non-storm water discharges; and (2) Reduce the discharge of pollutants from storm water conveyance systems to the Maximum Extent Practicable (MEP statutory standard) throughout the use of a developed site. To address pollutants that may be generated from new development once the site is in use, the Municipal Permit further requires that the City implement a series of permanent BMPs described in a document called the Model Standard Urban Storm Water Mitigation Plan, or SUSMP (pronounced "sue-sump"), which was approved by the Regional Board on June 12, 2002.

2.1.3 Legal Framework

The requirement to implement storm water BMP requirements for development projects is based on Section 402 (p) of the Clean Water Act. The Federal Clean Water Act amendments of 1987 established a framework for regulating storm water discharges from municipal, industrial, and construction activities under the NPDES program. Under the Federal Clean Water Act, municipalities throughout the nation are issued a Municipal NPDES Permit. The primary goal of the Municipal Permit is to stop polluted discharges from entering the storm water conveyance system and local receiving and coastal waters.

In California, the State Water Resources Control Board (SWRCB), through the nine Regional Boards, administers the NPDES storm water municipal permitting program. Based on the San Diego Municipal Permit issued by the San Diego Regional Board, the City is required to develop and implement permanent storm water BMPs addressing pollution from new development projects.

2.2 PROJECT REVIEW AND PERMITTING PROCESS

2.2.1 Introduction to Review and Permitting Process

The City of Carlsbad's Storm Water Management and Discharge Control Ordinance (Carlsbad Municipal Code Chapter 15.12), requires that all new development and redevelopment activities comply with the storm water pollution prevention requirements. These storm water pollution prevention requirements, which are described in detail in Section 2.3, "Permanent Storm Water Best Management Practices Selection Procedure," are site specific and vary based on the project's potential impact on receiving water quality.

The steps below describe the elements of the plan review and permitting processes for storm water best management practice (BMP) requirements. The flow chart in Figure 1, "Review Process for Discretionary Actions" demonstrates how storm water requirements are incorporated into projects requiring subdivision approvals, development permits or other discretionary actions.

For projects that do not require discretionary action, City staff will require that SUSMP requirements are incorporated into the project design and shown on the plans prior to issuance of any ministerial permit.

The process for issuance of ministerial projects includes (1) receipt of an application, (2) determination of application completeness, (3) staff review of application, including appropriate storm water requirements and (4) issuance of a ministerial permit. The applicants are required to complete a "Standard Urban Storm Water Mitigation Plan Questionnaire" (Appendix A) as a part of their project submittal to determine the level of storm water requirements, including SUSMP requirements that will be a part of the project design and shown on the plans.

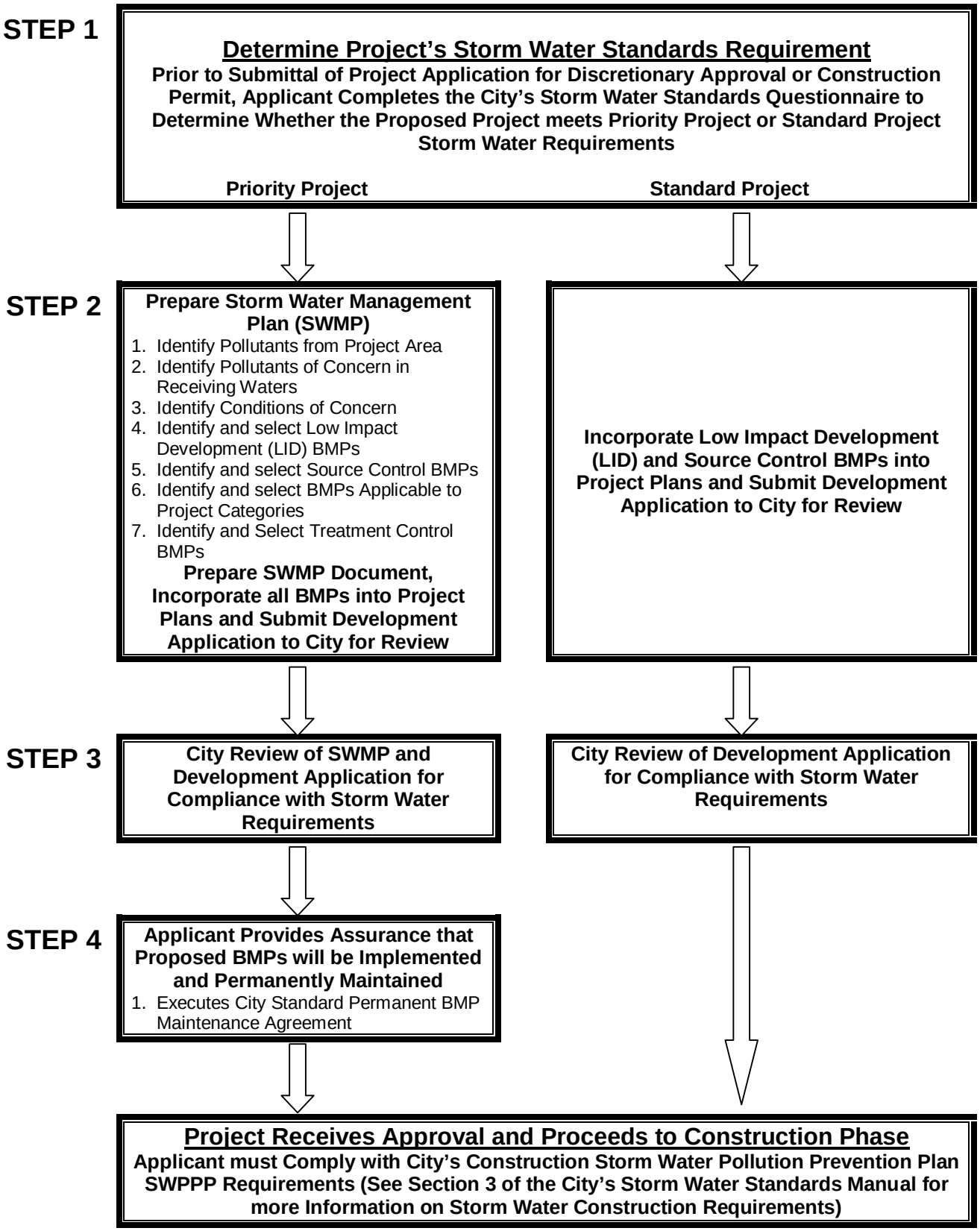
2.2.2 Step 1 : Determine Applicable Permanent Storm Water BMP Requirements

Prior to submittal, applicants must complete the "Standard Urban Storm Water Mitigation Plan Questionnaire" in Appendix A. This questionnaire must be completed, signed by the responsible party for the project, and submitted with your permit application. The questionnaire will determine if the project requires Standard BMPs, Priority BMPs or is exempt from SUSMP requirements as described below. Projects meeting priority requirements must include all required components of a Storm Water Management Plan (SWMP) with their project application prior to deeming the application package complete.

Note: The questionnaire form referenced above must be completed for all permit applications, even if previous approvals exist. Projects requesting additional construction permits or discretionary approvals, even though previous permits and/or approvals have been obtained, will be required to comply with the storm water requirements in this document

Figure 1

Review Process for Discretionary Actions



2.2.3 Permanent Storm Water BMP Requirements

2.2.3.1 Standard Project Requirements.

Projects subject to only the standard permanent storm water requirements must incorporate the LID site design and source control requirements identified in Sections 2.3.3.1 and 2.3.3.2, into the project (see Table 1). Refer to Section 2.2.4 "Step 2 - Prepare & Submit Appropriate Plans," for guidance in the BMP design process.

2.2.3.2 Priority Project Requirements

All new development and significant redevelopment projects that fall into one of the following "priority project" categories are subject to these SUSMP requirements, subject to the lawful prior approval provisions of the Municipal Permit. In the instance where a project feature, such as a parking lot, falls into a priority project category, the entire project footprint is subject to these SUSMP requirements. These categories are:

Residential development of 10 units or more
Commercial development greater than 1 acre
Heavy industry development greater than 1 acre
Automotive repair shops
Restaurants
Hillside development greater than 5,000 square feet
Projects located within or directly adjacent to or directly discharging to receiving waters within Environmentally Sensitive Areas that create 2,500 square feet or more of impervious surface or increase the area of imperviousness to 10% or more of its naturally occurring condition
Projects greater than 2,500 square feet of impervious surface that discharge to receiving waters within or adjacent to Environmentally Sensitive Areas
Parking Lots 5,000 square feet or more impervious surface or with > 15 parking spaces and potentially exposed to urban runoff
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater of impervious surface
Retail gasoline outlets 5,000 square feet or more or with a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
Project is located within 200 feet of the Pacific Ocean and (1) creates more than 2,500 square feet of impermeable surface or (2) increases the impermeable surface on the property by more than 10%.

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered priority projects; resurfacing and reconfiguring surface parking lots and existing roadways; new sidewalk construction, pedestrian ramps, or bikelane on existing roads; and routine replacement of damaged pavement, such as pothole repair. Parking lots, buildings and other structures associated with utility projects are subject to SUSMP requirements if one or more of the criteria for the above categories are met.

Projects subject to priority project permanent storm water requirements must incorporate all applicable requirements in Section 2.3.3, "Establish Permanent Storm Water Best Management Practices," (requirements BMP-1 through BMP-33) into the project design. This includes the LID site design and source control BMPs, BMPs applicable to individual priority project categories, and treatment control BMP requirements. If a priority project meets more than one priority project category definition, as shown in Table 1, the project is subject to all BMPs applicable to individual priority project categories that apply. For example, if a project is proposing to build 50 attached residential units and a 6,000 square foot restaurant with a 70-space surface parking lot, the project would be subject to the individual priority project category BMP requirements for "Attached Residential Development," "Restaurants," and "Parking Lots," as shown in Table 1, below. Refer to Section 2.2.4 "Step 2 - Prepare & Submit Appropriate Plans," for guidance in the permanent BMP design process.

Table 1

Standard Development Project & Priority Project Storm Water BMP Requirements Matrix

	Site Design BMPs[1]	Source Control BMPs[2]	BMPs Applicable to Individual Priority Project Categories[3]										Treatment Control BMPs[4]
			a. Private Roads	b. Residential Driveways & Guest Parking	c. Dock Areas	d. Maintenance Bays	e. Vehicle Wash Areas	f. Equipment Wash Areas	g. Outdoor Processing Areas	h. Surface Parking Areas	i. Fueling Areas	j. Hillside Landscaping	
Standard Projects	R	R	R	R	R	R	R	R	R	R	R	R	O
Priority Projects:													
Detached Residential Development	R	R	R	R								R	S
Attached Residential Development	R	R	R										S
Commercial Development greater than 100,000 ft^2	R	R			R	R	R		R				S
Heavy industry /industrial	R	R	R		R	R		R	R	R			S
Automotive Repair Shop	R	R			R	R	R	R			R		S
Restaurants	R	R			R			R					S
Steep Hillside Development greater than 5,000 ft^2	R	R	R									R	S
Parking Lots	R	R								R[5]			S
Retail Gasoline Outlets	R	R				R	R	R		R	R		S
Streets, Highways & Freeways	R	R											S

R = Required; select one or more applicable and appropriate BMPs from the applicable steps in Section III.2.A-D, or equivalent as identified in Appendix B.

O = Optional/ or may be required by City staff. As appropriate, applicants are encouraged to incorporate treatment control BMPs and BMPs applicable to individual priority project categories into the project design. City staff may require one or more of these BMPs, where appropriate.

S = Select one or more applicable and appropriate treatment control BMPs from Appendix B.

(1) Refer to Section 2.3.3.1

(2) Refer to Section 2.3.3.2.

(3) Priority project categories must apply specific storm water BMP requirements, where applicable. Priority projects are subject to the requirements of all priority project categories that apply. Refer to Section 2.3.3.3

(4) Refer to Section 2.3.3.4

(5) Applies if the paved area totals >5,000 square feet or with >15 parking spaces and is potentially exposed to urban runoff.

2.2.4 Step 2 : Prepare and Submit Appropriate Plans.

After determining the general categories of storm water requirements that apply to the project in Step 1 (e.g., priority project permanent BMPs and/or standard permanent BMPs), refer to the instructions in this step (see below) to determine what analysis and/or specific BMP requirements in Section 3.0 of the SUSMP must be provided and/or incorporated into the project.

NOTE: Projects are only required to provide applicable BMPs. For example, an attached residential development project subject to the priority project requirements would not have to meet the "private road" requirements in this plan if no private roads were proposed. In addition, the City Engineer may approve proposed alternatives to any of the BMP requirements in this plan if they are determined to be applicable and equally effective. In all cases, priority projects shall meet the numeric sizing treatment standards in Table 3.

2.2.5 Permanent Storm Water BMPs

2.2.5.1 Standard Project Requirements

Projects subject to only standard permanent BMP requirements need only to complete the "Identify Pollutants from the Project Area" procedure (Section 2.3.2.1), and then incorporate the requirements in Section 2.3.3.1, "LID Site Design BMPs" and Section 2.3.3.2, "Source Control BMPs". Applicants must incorporate all necessary permanent BMPs into the project plans prior to submittal, regardless of project type. Analysis of the project's anticipated pollutants of concern must also be included with the project submittal.

2.2.5.2 Priority Project Requirements

Projects subject to the priority project permanent BMP requirements must complete all of the analyses required in Section 2.3.2, "Identify Pollutants and Conditions of Concern," and incorporate all of the applicable BMP requirements in Section 2.3.3, "Establish Permanent Storm Water BMP Requirements". Applicants must incorporate all necessary permanent BMPs into the project plans prior to submittal, regardless of project type. In addition, projects subject to priority project requirements must prepare and submit a Storm Water Management Plan (SWMP) in accordance with required sections as listed in Appendix C. Analysis of the project's anticipated pollutants of concern, anticipated pollutants of concern in downstream receiving waters, and conditions of concern, must also be included in the Storm Water Management Plan as part of the project submittal. After preparing plans and supporting documents according to the requirements in this plan, submit plans to the City for review (See Step 3)

2.2.6 Step 3 – Determine Adequacy of Proposed Plans.

Under the authority of the City Engineer, staff will review submitted plans for compliance with the applicable storm water requirements contained in this plan. The City Engineer may approve proposed alternatives to the BMP requirements in this plan if they are determined to be applicable and equally effective. Additional analysis or information may be required to enable staff to determine the adequacy of proposed BMPs, and will be requested through a project issues report following the conclusion of a staff review cycle. After all storm water requirements have been approved by the City Engineer, proceed to Step 4 to assure implementation and maintenance of the approved BMPs through permit conditions, plan notes, and maintenance agreements.

2.2.7 Step 4 -- Assure Implementation and Maintenance of Requirements.

Applicants must provide assurances that permanent storm water BMPs will be constructed and permanently maintained throughout the use of a developed site. The summary below describes how permanent BMP requirements must be assured during both discretionary approval processes. After the City Engineer has approved all permanent BMPs, refer to Section 4, "Implementation & Maintenance Requirements" to determine how permanent BMP implementation and maintenance will be assured.

For any discretionary action, permanent storm water requirements shall be incorporated into the project design and be shown on the plans. In addition, the project will be conditioned to execute a maintenance agreement for ongoing permanent BMP maintenance, satisfactory to the City Engineer, prior to the issuance of any construction permits. This requirement shall be noted on the plans for the discretionary action.

2.3 PERMANENT BEST MANAGEMENT PRACTICES SELECTION PROCEDURE

2.3.1 INTRODUCTION

The following process should be followed to determine the permanent BMPs for the applicant's project.

2.3.2 IDENTIFY POLLUTANTS AND CONDITIONS OF CONCERN

2.3.2.1 Identify Pollutants from the Project Area

Using Table 2, below, identify the project's anticipated pollutants. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern. Projects meeting the definition of more than one project category shall identify all general pollutant categories that apply. Descriptions of the general pollutant categories listed in Table 2 are listed in Appendix F under the definition of "pollutants of concern."

Table 2

Anticipated and Potential Pollutants Generated by Land Use Type

	General Pollutant Categories								
Project Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P(1)	X
Commercial Development >100,000 ft^2	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	
Steep Hillside Development >5,000 ft^2	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

2.3.2.2 Identify Pollutants of Concern in Receiving Waters

For priority projects, the following analysis shall be conducted and reported in the project's Storm Water Management Plan:

1. For each of the proposed project discharge points, identify the receiving water(s), including hydrologic unit basin number(s), as identified in the most recent version of the *Water Quality Control Plan for the San Diego Basin*[1], prepared by the San Diego Regional Water Quality Control Board.
2. Identify any receiving waters, into which the developed area would discharge to, listed on the most recent list of Clean Water Act Section 303(d) impaired water bodies[2]. List any and all pollutants for which the receiving waters are impaired.
3. Compare the list of pollutants for which the receiving waters are impaired with the pollutants anticipated to be generated by the project (as discussed in Section 2.3.2.1). Any pollutants identified in the process described in Section 2.3.2.1 which are also causing impairment of receiving waters shall be considered pollutants of concern.

2.3.2.3 Identify Conditions of Concern

For priority projects where downstream erosion is a potential, the following analysis shall be conducted and reported in the project's Storm Water Management Plan:

1. Evaluate the project's conditions of concern in a drainage study report prepared by a registered civil engineer in the State of California, with experience in fluvial geomorphology and water resources management. The report shall consider the project area's location (from the larger watershed perspective), topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, wet season groundwater depth, and any other relevant hydrologic and environmental factors to be protected specific to the project area's watershed.
2. As part of the drainage study, a qualified, licensed professional shall provide a report on proposed infiltration techniques (trenches, basins, dry wells, permeable pavements with underground reservoir for infiltration) regarding any potential adverse geotechnical concerns. Geotechnical conditions such as: slope stability, expansive soils, compressible soils, seepage, groundwater depth, and loss of foundation or pavement subgrade strength should be addressed, and mitigation measures provided.
3. As part of the drainage study, the civil engineer shall conduct a field reconnaissance to observe and report on downstream conditions, including undercutting erosion, slope stability, vegetative stress (due to flooding, erosion, water quality degradation, or loss of water supplies) and the area's susceptibility to erosion or habitat alteration as a result of an altered flow regime.
4. The Drainage study shall compute rainfall runoff characteristics from the project area including at a minimum, peak runoff, time of concentration, and detention volume (if appropriate). These characteristics shall be developed for the two-year and 10-year frequency, six-hour or 24-hour, type B storm for the Carlsbad area in San Diego County (as described in the San Diego County Hydrology Plan, September 2002). The 6-hour Type B storm yields larger peak discharges for certain smaller drainage areas (usually less than 10 square miles, depending upon area, time to peak, CN, frequency, etc.). The 24-hour Type B storm yields larger peak discharges for larger drainage areas (usually greater than 10 square miles, depending upon area, time to peak, CN, frequency, etc.). The largest peak flow should be included in the report. The report shall also report the project's conditions of concern based on the hydrologic and downstream conditions discussed above. Where downstream conditions of concern have been identified, the drainage study shall establish that pre-project hydrologic conditions that minimize impacts on those downstream conditions of concern would be either improved or maintained by the proposed project, satisfactory to the City Engineer, by incorporating the permanent BMP requirements identified in Section 2.3.3, below.

For Priority Development Projects that disturb 50 acres or more:

1. Priority Development Projects' post-project runoff flow rates and durations shall not exceed pre-project runoff flow rates and durations (Interim Hydromodification Criteria), where the increased

1. Go to: http://www.swrcb.ca.gov/~rwqcb9/programs/basinplan.html

2. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop a list of water quality limited segments. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. Go to: http://www.swrcb.ca.gov/tmdl/303d_lists.html. San Diego is in Region 9 (a link is provided).

discharge flow rates and durations will result in increased potential for erosion or other significant adverse impacts to beneficial uses, attributable to changes in flow rates and durations.

2. Priority Development Projects disturbing 50 acres or more shall implement hydrologic controls to manage post-project runoff flow rates and durations as required by the Interim Hydromodification Criteria.

2.3.3 ESTABLISH PERMANENT STORM WATER BEST MANAGEMENT PRACTICES

After identifying the project's pollutants of concern, and conditions of concern (for priority projects), in Section 3.1, projects subject to standard or priority project requirements shall implement all applicable LID site design, and source control BMPs listed below. Projects subject to priority project requirements must also implement the BMPs applicable to individual priority project categories and structural treatment control BMPs. Applicants may employ alternative comparable and equally effective LID site design and source control BMPs (including requirements applicable to individual priority project categories), satisfactory to the City Engineer.

Projects are encouraged to address these objectives through the creation of a hydrologically functional project design that attempts to mimic the natural hydrologic regime. Mimicking a site's natural hydrologic regime can be pursued by:

- Reducing imperviousness (such as, new surface parking lots), conserving natural resources and areas, maintaining and using natural drainage courses in the storm water conveyance system, and minimizing clearing and grading.
- Providing runoff storage measures dispersed throughout a site's landscape with the use of bioretention facilities and detention, retention, and infiltration practices.
- Implementing on-lot hydrologically functional landscape design and management practices.

These design principles offer an innovative approach to urban storm water management, one that does not rely on the conventional end-of-pipe or in-the-pipe structural methods but instead strategically integrates storm water controls throughout the urban landscape. Useful resources for applying these principles, referenced in the appendix, include *Start at the Source* (1999), and *Low-Impact Development Design Strategies* (1999) (see Appendix D). Effective source controls offer another strategy to reduce a project's need for treatment. Applicants are encouraged to design projects so that runoff is treated by LID site design BMPs, such as rooftop runoff treated in landscaping, so that it may be applied towards the numeric sizing treatment standards, satisfactory to the City Engineer. Therefore, projects shall incorporate, where applicable, storm water BMPs into the project design, in the following progression:

- LID Site Design BMPs
- Source Control BMPs
- BMPs for Individual Priority Project Categories (these are LID site design and source control BMPs)
- Treatment Control BMPs

The series of best management practices listed in Section 2.3.3 have been organized sequentially to allow the applicant and design professional to incorporate the LID site design, source control BMPs, and where necessary, requirements applicable to individual priority project categories and treatment control BMPs in this progression.

2.3.3.1 LID Site Design BMPs

Projects shall be designed so as to minimize directly connected impervious surfaces and to promote infiltration using LID techniques. Projects shall, to the maximum extent practicable, minimize the introduction of pollutants and conditions of concern that may result in significant impacts, generated from site runoff to the storm water conveyance system. Projects shall also control post-development peak storm water runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion and to protect stream habitat. Projects can address these objectives through the creation of a hydrologically functional project design that attempts to mimic the natural hydrologic regime. The following are LID Site Design BMPs to be implemented in order to achieve the requirements.

<u>Maintain Pre-Development Rainfall Runoff Characteristics</u>

Control post-development peak storm water runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion by applying the following concepts:

BMP-1 Minimize and disconnect impervious surfaces. (1) Increase building density (number of stories above or below ground); (2) construct walkways, trails, patios, overflow parking lots and alleys and other low-traffic areas with permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials; (3) construct streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walkable environment for pedestrians are not compromised; and (4) minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.

BMP-2 Conserve natural areas, soils and vegetation and provide buffer zones between natural water bodies and the project footprint. (1) Concentrate or cluster development on the least environmentally sensitive portions of a site while leaving the remaining land in a natural, undisturbed condition; (2) Use natural drainage systems to the maximum extent practicable (natural drainages and vegetated swales are preferred over using lined channels or underground storm drains, and; (3) minimize soil compaction.

BMP-3 Minimize Directly Connected Impervious Areas. (1) Where landscaping is proposed, drain rooftops into adjacent landscaping prior to discharging to the storm water conveyance system; and (2) where landscaping is proposed, drain impervious parking lots, sidewalks, walkways, trails, and patios into adjacent landscaping.

BMP-4 Maximize canopy interception and water conservation. (1) Preserve existing native trees and shrubs; and (2) plant additional native or drought tolerant trees and large shrubs in place of non-drought tolerant exotics.

Protect Slopes and Channels

BMP-5 Convey runoff safely from the tops of slopes.

BMP-6 Vegetate slopes with native or drought tolerant vegetation.

BMP-7 Stabilize permanent channel crossings.

BMP-8 Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.

BMP-9 Minimize disturbances to natural drainages

2.3.3.2 Source Control BMPs

Design Outdoor Material Storage Areas to Reduce Pollution Introduction

BMP-10 Hazardous materials with the potential to contaminate urban runoff shall be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with rain, runoff or spillage to the storm water conveyance system; and (2) protected by secondary containment structures such as berms, dikes, or curbs. The storage area shall be paved and sufficiently impervious to contain leaks and spills, and have a roof or awning to minimize direct precipitation within the secondary containment area.

Design Trash Storage Areas to Reduce Pollution Introduction

BMP-11 Trash storage areas shall be: (1) paved with an impervious surface, designed not to allow run-on from adjoining areas, and screened or walled to prevent off-site transport of trash; and, (2) contain attached lids on all trash containers that exclude rain; or (3) contain a roof or awning to minimize direct precipitation.

Employ Integrated Pest Management Principles

Integrated pest management (IPM) is an ecosystem-based pollution prevention strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant plant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment. More information may be obtained at the UC Davis website (http://www.ipm.ucdavis.edu/WATER/U/index.html).

BMP-12 Eliminate and/or reduce the need for pesticide use in the project design by: (1) Plant pest-resistant or well-adapted plant varieties such as native plants; and (2) Discourage pests by modifying the site and landscaping design. Pollution prevention is the primary "first line of defense" because pollutants that are never used do not have to be controlled or treated (methods which are inherently less efficient).

BMP-13 Distribute IPM educational materials to future site residents/tenants. Minimally, educational materials must address the following topics: (1) Keeping pests out of buildings and landscaping using barriers, screens, and caulking; (2) Physical pest elimination techniques, such as, weeding, squashing, trapping, washing, or pruning out pests; (3) Relying on natural enemies to eat pests; (4) Proper use of pesticides as a last line of defense. More information may be obtained at the UC Davis website (http://www.ipm.ucdavis.edu/WATER/U/index.html).

Use Efficient Irrigation Systems & Landscape Design

In compliance with the Water Conservation in Landscaping Act, the following methods to reduce excessive irrigation runoff shall be implemented:

BMP-14 Employ rain shutoff devices to prevent irrigation during and after precipitation.

BMP-15 Design irrigation systems to each landscape area's specific water requirements.

BMP-16 Use flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.

Provide Storm Water conveyance System Stenciling and Signage

BMP-17 Provide concrete stamping, or equivalent, of all storm water conveyance system inlets and catch basins within the project area with prohibitive language (e.g., "No Dumping – I Live in <<name receiving water>>"), satisfactory to the City Engineer. Stamping may also be required in Spanish.

BMP-18 Post signs and prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area, trailheads, parks and building entrances.

2.3.3.3 BMPs Applicable to Individual Priority Project Categories

Where identified in Table 1, the following requirements shall be incorporated into applicable priority projects. Projects shall adhere to each of the individual priority project category requirements that apply to the project (e.g., a restaurant with more than 15 parking spaces would be required to incorporate the requirements for 'c. Dock Areas', 'f. Equipment Wash Areas', and 'h. Surface Parking Areas' into the project design).

Private Roads

BMP-19 The design of private roadway drainage shall use at least one of the following (for further guidance, see Start at the Source [1999]): (1) rural swale system- street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings; (2) urban curb/swale system- street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter; or (3) dual drainage system- first flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder.

Residential Driveways & Guest Parking

BMP-20 Driveways shall have one of the following: (1) shared access; (2) flared entrance (single lane at street); (3) wheelstrips (paving only under tires); (4) porous paving; or (5) designed to drain into landscaping prior to discharging to the storm water conveyance system.

BMP-21 Uncovered temporary or guest parking on private residential lots shall be: (1) paved with a permeable surface; or (2) designed to drain into landscaping prior to discharging to the storm water conveyance system.

Dock Areas

BMP-22 Loading/unloading dock areas shall include the following: (1) cover loading dock areas, or design drainage to preclude urban run-on and runoff; and (2) An acceptable method of containment and pollutant removal, such as a shut-off valve and containment area. Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

Maintenance Bays

BMP-23 Maintenance bays shall include at least one of the following: (1) repair/ maintenance bays shall be indoors; or, (2) designed to preclude urban run-on and runoff.

BMP-24 Maintenance bays shall include a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm water conveyance system is prohibited.

Vehicle & Equipment Wash Areas

BMP-25 Areas for washing/steam cleaning of vehicles and areas for outdoor equipment/accessory washing and steam cleaning shall be: (1) self-contained to preclude run-on and run-off, covered with a roof or overhang, and equipped with a clarifier or other pretreatment facility; and (2) properly connected to a sanitary sewer.

Outdoor Processing Areas

BMP-26 Outdoor processing areas shall: (1) cover or enclose areas that would be the most significant source of pollutants; or, (2) slope the area toward a dead-end sump; or, (3) discharge to the sanitary sewer system.

BMP-27 Grade or berm processing area to prevent run-on from surrounding areas.

BMP-28 Installation of storm drains in areas of equipment repair is prohibited.

Surface Parking Areas

BMP-29 Where landscaping is proposed in surface parking areas (both covered and uncovered), incorporate landscape areas into the drainage design.

BMP-30 Overflow parking (parking in excess of the project's minimum parking requirements) should be constructed with permeable paving.

Non-Retail Fueling Areas

Non-Retail fueling areas shall be designed with the following:

BMP-31 Fuel dispensing area that is: (1) paved with Portland cement concrete or equivalent smooth impervious surface (asphalt concrete is prohibited); (2) designed to extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less; (3) sloped to prevent ponding; (4) separated from the rest of the site by a grade break that prevents run-on of urban runoff; and (5) designed to drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.

BMP-32 Overhanging roof structure or canopy that is: (1) equal to or greater than the area within the fuel dispensing area's grade break; and (2) designed not to drain onto or across the fuel dispensing area.

Steep Hillside Landscaping

BMP-33 Steep hillside areas disturbed by project development shall be landscaped with deep-rooted, drought tolerant plant species selected for erosion control, in accordance with the Landscape Technical Plan.

2.3.3.4 Treatment Control BMPs

Where identified in Table 1, and after LID site design and source control BMPs have been incorporated into the project, applicants of priority projects shall design a single or combination of treatment control BMPs designed to infiltrate, filter, and/or treat runoff from the project footprint to one of the “Numeric Sizing Treatment Standards” listed in Table 3, below. Applicants must use the Structural Treatment BMP Selection Procedure outlined in Section 2.3.3.5, below to select appropriate treatment control BMPs. Applicants are encouraged to design projects so that runoff is treated by LID site design BMPs, such as rooftop runoff treated in landscaping, so that it may be applied towards the numeric sizing treatment standards, satisfactory to the City Engineer. Treatment efficiencies can also be realized by locating treatment controls strategically within a drainage basin without being limited by the project boundary.

In all instances, structural treatment BMP(s) may be located on- or off-site, used singly or in combination, or shared by multiple new developments, pursuant to the following criteria:

1. All structural treatment control BMPs shall infiltrate, filter, and/or treat the required runoff volume or flow prior to discharging to any receiving water body supporting beneficial uses;
2. Post-construction structural treatment control BMPs for a single priority project shall collectively be designed to comply with the numeric sizing treatment standards;
3. Shared BMPs shall be operational prior to the use of any dependent development or phase of development. The shared BMPs shall only be required to treat the dependent developments or phases of development that are in use;
4. Interim storm water BMPs that provide equivalent or greater treatment than is required may be implemented by a dependent development until each shared BMP is operational. If interim BMPs are selected, the BMPs shall remain in use until permanent BMPs are operational.

Alternatively, a project proponent may elect to implement a combination of LID BMPs that either disperse and infiltrate, or direct to bioretention facilities, the flows from all impervious areas on-site. These BMPs are presumed to provide maximum extent practicable treatment for all pollutants of concern; therefore no further documentation of the treatment BMP selection process is required.

Treatment control BMPs with a high or medium pollutant removal efficiency for the project's most significant pollutant of concern shall be selected. Treatment control BMPs with a low removal efficiency ranking shall only be approved by the Copermittee when a feasibility analysis has been conducted which exhibits that implementation of treatment control BMPs with a high or medium removal efficiency ranking are infeasible.

Treatment control BMPs shall not be constructed within a receiving water.

Table 3
Numeric Sizing Treatment Standards

Volume

1. Volume-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) either:
   - i. The volume of runoff produced from a 85th percentile storm event, as determined from isopluvial maps contained in the County of San Diego Hydrology Plan (0.6 inch approximate average for the San Diego County area) [Note: Applicants may calculate the 85th percentile storm event using local rain data, when available. See the County of San Diego's isopluvial map at http://www.sdcounty.ca.gov/dpw/engineer/flood.htm]; or
   - ii. The volume of runoff produced by the 85th percentile storm event, determined as the maximized capture urban runoff volume for the area, from the formula recommended in *Urban Runoff Quality Management, WEF Plan of Practice No. 23/ ASCE Plan of Practice No. 87, page 175 Equation 5.2; (1998*); or
   - iii. The volume of annual runoff based on unit basin storage volume, to achieve 90 percent or more volume treatment by the method recommended in the latest edition of the *California Stormwater Best Management Practices Handbook,* or
   - iv. The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event.

OR

Flow

2. Flow-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) either:

3.0 The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour for each hour of a storm event; or

4.0 The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or

5.0 The maximum flow rate of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile hourly rainfall intensity multiplied by a factor of two.

2.3.3.5 Structural Treatment BMP Selection Procedure

Priority projects shall select a single or combination of treatment BMPs from the categories in Table 4 that maximize pollutant removal for the particular pollutant(s) of concern.

1. Determine if the project would discharge to a Clean Water Act Section 303(d) impaired receiving water. If any receiving waters for the project are impaired, note pollutant(s) receiving water(s) is/are listed for.
2. If the project is anticipated to generate a pollutant (per Table 2) that the receiving water is listed for, select one or more BMPs from Table 4 that maximize the pollutant removal for that pollutant. Any pollutants the project is expected to generate that are also causing a Clean Water Act section 303(d) impairment of the downstream receiving waters of the project shall be given top priority in selecting treatment BMPs
3. If none of the project's receiving waters are listed as impaired, select one or more BMPs from Table 4 that maximize the removal of the pollutants the project is anticipated to generate.

Alternative storm water BMPs not identified in Table 4 may be approved at the discretion of the City Engineer, provided the alternative BMP is as effective in removal of pollutants of concern as other feasible BMPs listed in Table 4.

Table 4. Structural Treatment Control BMP Selection Matrix

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro -dynamic Devices
Coarse Sediment and Trash	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low

2.3.3.6 Notes on Treatment Control BMP Categories

All rankings are relative. Ranking of all facilities assumes proper sizing, design, and periodic maintenance. Following are general descriptions of each category.

- **Bioretention Facilities** (infiltration planters, flow-through planters, bioretention areas, and bioretention swales). Facilities are designed to capture runoff and infiltrate slowly through soil media which also supports vegetation. Bioretention facilities, except for flow-through planters, effectively promote infiltration into native soils. In clay soils, facilities may capture excess treated runoff in an underdrain piped to the municipal storm drain system. Typical criteria: an infiltration surface area at least 4% of tributary impervious area, 6-inch average depth of top reservoir, 18-inch soil layer, 12-inch to 18-inch gravel subsurface storage layer.
- **Settling Basins and Wetlands** (extended detention basins, "wet" basins, decorative or recreational lakes or water features also used for stormwater treatment, constructed wetlands). Facilities are designed to capture a minimum water quality volume of 80% of total runoff and detain for a minimum of 48 hours. Some wetland designs have proven effective in removing nutrients, but performance varies.
- **Infiltration Facilities or Practices** (infiltration basins, infiltration trenches, dry wells, dispersal of runoff to landscape, pervious pavements). These facilities and landscape designs capture, retain, and infiltrate a minimum of 80% of runoff into the ground. Infiltration facilities are generally only feasible in permeable (Hydrologic Soil Group A or B) soils. Volume and area of infiltration facilities depends on soil permeability and safety factor used. Typical criteria: Infiltration facilities should have pretreatment to remove silt to prolong life of the facility. A 10-foot vertical separation from average seasonal groundwater depth is required. Dispersal to landscape may be accomplished in

any soil type and generally requires a maximum 2:1 ratio impervious:pervious and concave topography to ensure the first 1 inch of rainfall is retained.

- **Media Filters** (sand filters). Filters designed to treat runoff produced by a rainfall of 0.2 inches per hour (or 2×85^{th} percentile hourly rainfall intensity) by slow infiltration through sand or other media. Typical criteria: Surface loading rate not to exceed 5 inches/hour. Entire surface of the sand must be accessible for maintenance.
- **High Rate Biofilters** (tree wells, typically proprietary). Biofilters with specially designed media to rapidly filter runoff while removing some pollutants. Filterra® (proprietary version) recommends surface loading rates of up to 100 inches/hour.
- **High-rate Media Filters** (typically proprietary). Vaults with replaceable cartridge filters filled with inorganic media.
- **Drainage Inserts** have low effectiveness in removing pollutants that tend to associate with fine particles and have medium effectiveness in removing coarse sediment and trash. They are sometimes used to augment more effective treatment facilities and are sometimes used alone when more effective facilities have been deemed infeasible.

2.3.3.7 Notes on Pollutants of Concern

In Table 3, Pollutants of Concern are grouped as gross pollutants, pollutants that tend to associate with fine particles, and pollutants that remain dissolved.

Pollutant	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

2.3.3.8 Restrictions on the Use of Infiltration Treatment BMPs

Treatment control BMPs that are designed to primarily function as infiltration devices shall meet the following conditions (these conditions do not apply to treatment BMPs which allow incidental infiltration and are not designed to primarily function as infiltration devices, such as grassy swales, detention basins, vegetated buffer strips, constructed wetlands, etc.): (1) urban runoff from commercial developments shall undergo pretreatment to remove both physical and chemical contaminants, such as sedimentation or filtration, prior to infiltration; (2) all dry weather flows shall be diverted from infiltration devices except for those non-storm water discharges authorized pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1): diverted stream flows, rising ground waters, uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to storm water conveyance systems, uncontaminated pumped ground water, foundation drains, springs, water from crawl space pumps, footing drains, air conditioning condensation, flow from riparian habitats and wetlands, water line flushing, landscape irrigation, discharges from potable water sources other than water main breaks, irrigation water, individual residential car washing, and dechlorinated swimming pool discharges; (3) pollution prevention and source control BMPs shall be implemented at a level appropriate to protect groundwater quality at sites where infiltration structural treatment BMPs are to be used; (4) the vertical distance from the base of any infiltration structural treatment BMP to the seasonal high groundwater mark shall be at least 10 feet. Where groundwater does not support beneficial uses, this vertical distance criterion may be reduced, provided groundwater quality is maintained; (5) the soil through which infiltration is to occur shall have physical and chemical characteristics that are adequate for proper infiltration durations and treatment of urban runoff for the protection of groundwater beneficial

uses[3]; (6) the horizontal distance between the base of any infiltration structural BMP and any water supply wells shall be 100 feet or as determined appropriate by the City Engineer.

Notification to neighboring jurisdictions may be required where staff determines the infiltration BMP(s) may impact the groundwater in a neighboring jurisdiction.

2.3.3.9 Structural Treatment Limited Exclusions

Proposed restaurants, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the numerical sizing criteria requirements listed in Table 3.

Where significant redevelopment results in an increase of less than 50 percent of the impervious surfaces of a previously existing development, and the existing development was not subject to priority project requirements, the numeric sizing criteria apply only to the addition, and not to the entire development.

2.4 IMPLEMENTATION AND MAINTENANCE REQIUREMENTS

2.4.1 Introduction

After all project BMPs have been approved by the City Engineer, applicants must ensure implementation and maintenance of the BMPs according to the processes outlined in the applicable sections for projects requesting discretionary actions and/or construction permits. In addition, any project that will require a "General NPDES Permit for Storm Water Discharges Associated with Industrial Activities," shall include the following note on the plans and condition in the permit/approval:

"Industrial NPDES Permit Requirement
The Permittee or designee shall provide evidence of coverage under the General Industrial National Pollutant Discharge Elimination System Permit, in the form of a Notice of Intent (NOI) filed with the State Water Resources Control Board, prior to the issuance of any construction permits."

2.4.2 Discretionary Actions

Projects that include permanent BMPs shall be conditioned to require the applicant or designee to execute a maintenance agreement for ongoing permanent BMP maintenance in accordance with the program outlined in the "Permanent Storm Water BMP Maintenance Agreement Requirements" below, satisfactory to the City Engineer, prior to the issuance of any construction permits. This requirement shall be noted on the plans for the discretionary action. The permanent BMPs shall be graphically shown on the plans, where possible, and made a condition of the project's permit/approval.

2.4.3 Requirements of Plan

The City has adopted an approach for ensuring verification that all permanent post construction BMPs are constructed per the requirements of the approved plans. To ensure that all permanent post construction BMPs for a particular project are installed/constructed at the conclusion of the project, the City requires developer preparation of a single plan BMP sheet as part of the plan submittals.

The single plan BMP sheet will include a site plan of the project calling out the location of each required LID site design, source control and treatment control BMP. In addition, the plan will contain a matrix listing of the required BMPs cross referenced with a list of the specific construction drawing sheet where the specified BMP construction is detailed. A copy of the single plan BMP sheet will be attached to each construction drawing set (building, mass grading, finished grading, improvements, and grading) highlighting the BMPs.

At a minimum, the plan sheet will have the following information included:

1) Entire property on one map
2) Drainage areas/direction of flows

[3] Soils at infiltration sites must have the following properties: Organic Content (OC) > 5%, pH between 6-8, Cation exchange capacity (CEC) > 5 meq/100g soil, in drill-hole conductivity valve of 0.5 in/hr or greater.

3) Private storm drain systems
4) Nearby waterbodies
5) Location of storm drain conveyance systems
6) Location of proposed stormwater controls and BMPs, including detention basins
7) Locations of impervious and pervious areas (hatched)
8) Location where materials would be exposed to stormwater (hatched)
9) Areas of potential erosion (hatched)
10) All site design and source control BMPs shown, detailed and/or listed in the General Notes on BMP Plan Sheet
11) All treatment control BMPs shown, detailed and called out on the plan sheet
12) Delineated areas draining to each treatment control BMP
13) Call out the 85th percentile discharge rates that are tributary to each entry point of the treatment control BMPs
14) Call out the pollutant types that are expected at each treatment control BMP
15) Signature Block for City Engineer
16) Inspection Signature Blocks for Building, Landscape and Engineering Inspectors

2.4.4 Permanent BMP Maintenance Agreement Requirements

Applicants shall propose a maintenance agreement assuring all permanent BMPs will be maintained throughout the "use" of a project site, satisfactory to the City Engineer (see Appendix E for a list of potential mechanisms). For projects with discretionary actions, the project's permit shall be conditioned to require the applicant or designee to execute a maintenance agreement for ongoing permanent BMP maintenance, satisfactory to the City Engineer, prior to the issuance of any construction permits. This requirement shall be noted on the plans for the discretionary action. City-approved method of permanent BMP maintenance shall be incorporated into, and shall be consistent with permits issued by resource agencies, before decision-maker approval of discretionary actions. In all instances, the applicant shall provide proof of execution of a City-approved method of permanent BMP maintenance repair and replacement before the issuance of construction approvals.

The maintenance agreement shall include the following:

1. Operation & Maintenance (O&M) Plan: The applicant shall include an Operation & Maintenance (O&M) plan, prepared satisfactory to the City, with the approved maintenance agreement, which describes the designated responsible party to manage the storm water BMP(s), employee's training program and duties, operating schedule, maintenance frequency, routine service schedule, specific maintenance activities (including maintenance of storm water conveyance system stamps), copies of resource agency permits, and any other necessary activities. At a minimum, maintenance agreements shall require the applicant to provide inspection and servicing of all permanent treatment BMPs on an annual basis. The project proponent or City-approved maintenance entity shall complete and maintain O&M forms to document all maintenance requirements. Parties responsible for the O&M plan shall retain records for at least 5 years. These documents shall be made available to the City for inspection upon request at any time.

2. Access Easement/Agreement: The applicant shall execute an access easement to the official maintenance entity that shall be binding on the land throughout the life of the project, until such time that the permanent treatment BMP requiring access is no longer required to be in use, satisfactory to the City. This access easement may be necessary in the event that the property owner does not adequately maintain the permanent stormwater BMP and the City maintains the BMP.

APPENDIX A – SUSMP Checklist

DEVELOPMENT APPLICATION
STORM WATER STANDARDS QUESTIONNAIRE

INSTRUCTIONS:

This questionnaire must be completed by applicant in advance of submitting for a development application (subdivision and land use planning approvals and construction permits). The results of the questionnaire determine the level of storm water pollution prevention standards applied to a proposed development or redevelopment project. Many aspects of project site design are dependent upon the storm water pollution protection standards applied to a project.

Applicant responses to the questionnaire represent an initial assessment of the proposed project conditions and impacts. City staff has responsibility for making the final assessment after submission of the development application. A staff determination that the development application is subject to more stringent storm water standards, than initially assessed by the applicant, will result in the return of the development application as incomplete.

If applicants are unsure about the meaning of a question or need help in determining how to respond to one or more of the questions, they are advised to seek assistance from Engineering Department Development Services staff.

A separate completed and signed questionnaire must be submitted for each new development application submission. Only one completed and signed questionnaire is required when multiple development applications for the same project are submitted concurrently. In addition to this questionnaire, applicants for construction permits must also complete, sign and submit a Construction Activity Storm Water Standards Questionnaire.

To address pollutants that may be generated from new development, the City requires that new development and significant redevelopment priority projects incorporate Permanent Storm Water Best Management Practices (BMPs) into the project design, which are described in Section 2 of the City's Storm Water Standards Manual This questionnaire should be used to categorize new development and significant redevelopment projects as priority or non-priority, to determine what level of storm water standards are required or if the project is exempt.

*1. Is your project a **significant redevelopment**?*

Definition:

***Significant redevelopment** is defined as the creation or addition of at least 5,000 square feet of impervious surface on an already developed site.*

***Significant redevelopment** includes, but is not limited to: the expansion of a building footprint; addition to or replacement of a structure; structural development including an increase in gross floor area and/or exterior construction remodeling; replacement of an impervious surface that is not part of a routine maintenance activity; and land disturbing activities related with structural or impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction.*

Note: If the Significant Redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMP requirements, the numeric sizing criteria discussed in Section F.1.b. (2)(c) applies only to the addition, and not to the entire development.

*2. If your project **IS** considered significant redevelopment, then please skip Section 1 and proceed with Section 2.*

*3. If your project **IS NOT** considered significant redevelopment, then please proceed to Section 1.*

SECTION 1

NEW DEVELOPMENT

PRIORITY PROJECT TYPE **Does you project meet one or more of the following criteria:**	**YES**	**NO**
1. *Home subdivision of 100 units or more.* Includes SFD, MFD, Condominium and Apartments		
2. *Residential development of 10 units or more.* Includes SFD, MFD, Condominium and Apartments		
3. *Commercial and industrial development greater than 100,000 square feet including parking areas.* Any development on private land that is not for heavy industrial or residential uses. Example: Hospitals, Hotels, Recreational Facilities, Shopping Malls, etc.		
4. *Heavy Industrial / Industry greater than 1 acre* (NEED SIC CODES FOR PERMIT BUSINESS TYPES) SIC codes 5013, 5014, 5541, 7532-7534, and 7536-7539		
5. *Automotive repair shop.* SIC codes 5013, 5014, 5541, 7532-7534, and 7536-7539		
6. *A New Restaurant where the land area of development is 5,000 square feet or more including parking areas.* SIC code 5812		
7. *Hillside development* (1) greater than 5,000 square feet of impervious surface area and (2) development will grade on any natural slope that is 25% or greater		
8. *Environmentally Sensitive Area (ESA).* Impervious surface of 2,500 square feet or more located within, "directly adjacent"[2] to (within 200 feet), or "discharging directly to"[3] receiving water within the ESA[1]		
9. *Parking lot.* Area of 5,000 square feet or more, or with 15 or more parking spaces, and potentially exposed to urban runoff		
10. *Retail Gasoline Outlets – serving more than 100 vehicles per day* Serving more than 100 vehicles per day and greater than 5,000 square feet		
11. *Streets, roads, highways, and freeways.* Project would create a new paved surface that is 5,000 square feet or greater.		
12. *Coastal Development Zone.* Within 200 feet of the Pacific Ocean and (1) creates more than 2500 square feet of impermeable surface or (2) increases impermeable surface on property by more than 10%.		

1 Environmentally Sensitive Areas include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); water bodies designated with the RARE beneficial use by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); areas designated as preserves or their equivalent under the Multi Species Conservation Program within the Cities and Count of San Diego; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees.

2 "Directly adjacent" means situated within 200 feet of the environmentally sensitive area.

3 "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flow from adjacent lands.

Section 1 Results:

If you answered **YES** to **ANY** of the questions above you have a **PRIORITY** project and **PRIORITY** project requirements **DO** apply. A Storm Water Management Plan, prepared in accordance with City Storm Water Standards, must be submitted at time of application. Please check the "MEETS PRIORITY REQUIREMENTS" box in Section 3.

If you answered **NO** to **ALL** of the questions above, then you are a **NON-PRIORITY** project and **STANDARD** requirements apply. Please check the "DOES NOT MEET PRIORITY Requirements" box in Section 3.

SECTION 2

SIGNIFICANT REDEVELOPMENT:	**YES**	**NO**
1. Is the project an addition to an existing priority project type? (Priority projects are defined in Section 1)		
If you answered **YES**, please proceed to question 2. If you answered **NO**, then you **ARE NOT** a significant redevelopment and you **ARE NOT** subject to **PRIORITY** project requirements, only **STANDARD** requirements. Please check the "DOES NOT MEET PRIORITY Requirements" box in Section 3 below.		
2. Is the project one of the following:		
a. Trenching and resurfacing associated with utility work?		
b. Resurfacing and reconfiguring surface parking lots?		
c. New sidewalk construction, pedestrian ramps, or bike land on public and/or private existing roads?		
d. Replacement of damaged pavement?		
If you answered **NO** to **ALL** of the questions, then proceed to Question 3. If you answered **YES** to **ONE OR MORE** of the questions then you **ARE NOT** a significant redevelopment and you **ARE NOT** subject to **PRIORITY** project requirements, only **STANDARD** requirements. Please check the "DOES NOT MEET PRIORITY Requirements" box in Section 3 below.		
3. Will the development create or add at least 5,000 square feet of impervious surfaces on an existing development or, be located within 200 feet of the Pacific Ocean and (1)create more than 2500 square feet of impermeable surface or (2) increases impermeable surface on property by more than 10%?		
If you answered **YES**, you **ARE** a significant redevelopment, and you **ARE** subject to **PRIORITY** project requirements. Please check the "MEETS PRIORITY REQUIREMENTS" box in Section 3 below. If you answered **NO**, you **ARE NOT** a significant redevelopment, and you **ARE NOT** subject to **PRIORITY** project requirements, only **STANDARD** requirements. Please check the "DOES NOT MEET PRIORITY Requirements" box in Section 3 below.		

SECTION 3

Questionnaire Results:

- ❑ MY PROJECT **MEETS PRIORITY REQUIREMENTS,** MUST COMPLY WITH PRIORITY PROJECT STANDARDS AND MUST PREPARE A STORM WATER MANAGEMENT PLAN FOR SUBMITTAL AT TIME OF APPLICATION**.**
- ❑ MY PROJECT **DOES NOT MEET PRIORITY REQUIREMENTS** AND MUST ONLY COMPLY WITH STANDARD STORM WATER REQUIREMENTS.

Applicant Information and Signature Box

Address:	Assessor Parcel Number(s):
Applicant Name:	Applicant Title:
Applicant Signature:	Date:

This Box for City Use Only

City Concurrence:	Yess	No
By:		
Date:		
Project ID:		

APPENDIX B

EXAMPLE PERMANENT STORM WATER BEST MANAGEMENT PRACTICES

The following are a list of BMPs that may be used to minimize the introduction of pollutants of concern that may result in significant impacts to receiving waters. Other BMPs approved by the Development Services Department as being equal or more effective in pollutant reduction than comparable BMPs identified below are acceptable. All BMPs must comply with local zoning and building codes and other applicable regulations.

LID Site Design BMPs

Minimizing Impervious Areas.
Reduce sidewalk widths.
Incorporate landscaped buffer areas between sidewalks and streets.
Design residential streets for the minimum required pavement widths.
Minimize the number of residential street cul-de-sacs and incorporate landscaped areas within cul-de-sac centers with curb-cuts to reduce their impervious cover.
Use open space development that incorporates smaller lot sizes.
Increase building density while decreasing the building footprint.
Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together.
Reduce overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.
Increase Rainfall Infiltration.
Use permeable materials for private sidewalks, driveways, parking lots, and interior roadway surfaces (examples: hybrid lots, parking groves, permeable overflow parking, etc.).
Use curb-cuts to direct pavement runoff into swales, landscaping, and natural areas prior to entering the MS4.
Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas, and avoid routing rooftop runoff to the roadway or the urban runoff conveyance system.
Pitch driveways and parking areas toward yards and vegetated areas prior to draining into the MS4.
Conserve and utilize natural soils and/or use amended soils to encourage light infiltration/ percolation.
Minimize disturbances to natural drainages
Minimize soil compaction in planned green space (landscaped areas, lawns, etc.) and re-till soils when compacted by grading/construction equipment.
Maximize Rainfall Interception.
Maximizing canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.
Cisterns / Rain barrels.
Foundation landscaping.

Minimize Directly Connected Impervious Areas (DCIAs):
Draining rooftops into adjacent landscaping prior to discharging to the storm drain.
Use curb-cuts to allow parking lots to drain into landscape areas co-designed as biofiltration areas and/or swales prior to draining into the MS4.
Draining roads, sidewalks, and impervious trails into adjacent landscaping.
Slope and Channel Protection.
Use of natural drainage systems to the maximum extent practicable.
Stabilized permanent channel crossings.
Planting native or drought tolerant vegetation on slopes.
Energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels.

Source Control BMPs
Storm drain system stenciling and signage
Outdoor material and trash storage area designed to reduce or control rainfall runoff
Efficient irrigation system

Treatment Control BMPs
Biofilters
Bioretention Swale (detains and infiltrates water through soil)
Stormwater Planter Box (open-bottomed)
Stormwater Flow-Through Planter (sealed bottom)
Vegetated filter strip
Bioretention Area
Vegetated / Rock SwaleVegetated filterVegetated Roofs / Modules / Walls
Detention Basins
Extended/dry detention basin with grass / vegetated lining
Extended/dry detention basin with impervious lining

Infiltration Facilities
Infiltration basin
Infiltration trench
Dry well
Permeable Paving
Gravel
Permeable asphalt
Pervious concrete
UnitPermeable unit pavers, ungrouted, set on sand or gravel
Subsurface Reservoir Bed

Wet Ponds and Wetlands
Wet pond (permanent pool)
Constructed wetland

Filtration Systems
Media filtration
Sand filtration

Hydrodynamic Separation Systems
Swirl Concentrator
Cyclone Separator

Trash Racks and Screens

APPENDIX C

STORM WATER MANAGEMENT PLAN GUIDELINES

Purpose
To describe the permanent storm water Best Management Practices (BMPs) that will be incorporated in the project to mitigate the impacts of urban runoff due to the development.

Minimum SWMP Requirements
The Storm Water Management Plan and Drainage Study Report shall be prepared by Civil Engineer registered in the State of California. The City staff may be able to provide resources for example SWMPs or SWMP templates.

SWMP Organization & Content

1. Table of Contents

2. Vicinity Map

3. Project Description
   - ❑ Narrative of project activities

4. Site Map
   - ❑ Entire property included on one map (use key map if multi-sheets)
   - ❑ Drainage areas/direction of flows
   - ❑ Private storm drain systems
   - ❑ Nearby water bodies and municipal storm drain inlets
   - ❑ Location of storm drain conveyance systems
   - ❑ Location of proposed stormwater controls and BMPs, including detention basins
   - ❑ Locations of impervious and pervious areas (hatched)
   - ❑ Location where materials would be exposed to stormwater (hatched)
   - ❑ Areas of potential erosion (hatched)
   - ❑ Location of building and activity areas (e.g. fueling islands, garages, waste container area, wash racks, hazardous material storage areas, etc.)
   - ❑ All site design and source control BMPs shown, detailed and/or listed in the General Notes on BMP Plan Sheet
   - ❑ All treatment control BMPs shown, detailed and called out on the plan sheet
   - ❑ Delineated areas draining to each treatment control BMP
   - ❑ Call out the 85^{th} percentile discharge rates that are tributary to each entry point of the treatment control BMPs
   - ❑ Call out the pollutant types that are expected at each treatment control BMP
   - ❑ Signature Block for City Engineer
   - ❑ Inspection Signature Blocks for Building, Landscape and Engineering Inspectors

5. Identify Pollutants of Concern in Receiving Waters
   - ❑ Identify anticipated pollutants from project area in accordance with Section 3.1.1. of this document
   - ❑ Identify receiving waters, watershed and hydrologic unit basin number
   - ❑ Identify impaired water bodies downstream of the project and impairment
   - ❑ Identify primary pollutants of concern
   - ❑ Provide Drainage Study Report in accordance with Section 3.1.3. of this document

6. Identify Conditions of Concern
   - ❑ Provide Drainage Study Report
   - ❑ Identify conditions of concern
   - ❑ Provide runoff calculations

7. Identify LID Site Design BMPs
   - ❑ Maintain pre-development rainfall runoff characteristics
   - ❑ Protect slopes and channels

8. Identify Source Control BMPs
   - ❑ Materials Storage
   - ❑ Trash storage
   - ❑ IPM
   - ❑ Efficient irrigation and landscape design
   - ❑ Inlet stenciling and signage
   - ❑ Other controls (as applicable)

9. BMPs for individual Priority Project Categories (as applicable)
   - ❑ Private road
   - ❑ Residential driveways and guest parking
   - ❑ Dock areas
   - ❑ Maintenance bays
   - ❑ Vehicle wash areas
   - ❑ Outdoor processing areas
   - ❑ Surface parking areas
   - ❑ Non-retail fueling areas
   - ❑ Steep hillside landscaping

10. Identify Structural Treatment Control BMPs
    - ❑ Design criteria (include calculations)
    - ❑ Basis for selection (include targeted pollutants, justification, and alternative analysis)
    - ❑ Pollutant removal information (other than vendor specifications)
    - ❑ Restrictions, if appropriate
    - ❑ Location of BMPs
    - ❑ Literature References

11. BMP Maintenance Provisions
    - ❑ Party that will be responsible for maintenance (Name, address and phone number)
    - ❑ Recommended maintenance frequency
    - ❑ Maintenance instructions for each BMP type included
    - ❑ Adequate access and room for maintenance equipment provided
    - ❑ BMP Maintenance Agreement referenced

CITY OF CARLSBAD
STORM WATER MANAGEMENT PLAN (SWMP)
SUBMITTAL REQUIREMENTS CHECKLIST

PROJECT: _____ DATE OF REPORT: _____
REVIEWED BY: _____ DATE REVIEWED: _____
PRELIMINARY REVIEW: _____ FINAL REVIEW: _____

No.	Requirement	Applicable? (Y/N)	Addressed? (Y/N)	Comment
	Prepared by a Registered Civil Engineer	Y		
1.	**Table of Contents**	Y		
2.	**Vicinity Map**	Y		
3.	**Project Description**	Y		
4.	**Single BMP Plan Sheet as described in Section 2.4.3**	Y		
	Entire property on one map	Y		
	Drainage areas/direction of flow	Y		
	Private storm drain systems	Y		
	Nearby water bodies/municipal storm drain inlets	Y		
	Location of storm water conveyance systems	Y		
	Location of existing/proposed storm water controls and BMPs	Y		
	Location of impervious areas	Y		
	Location where materials would be exposed to storm water	Y		
	Location of building and activity areas	Y		
	Areas of potential soil erosion	Y		
5.	**Identification of Pollutants of Concern (POCs)**	Y		
	Identification of pollutants from the project area	Y		
	Identification of receiving waters	Y		
	Identification of watershed and hydrologic unit basin number	Y		
	Identification of 303(d) listed receiving waters	Y		
	Identification of primary and secondary pollutants of concern	Y		
6.	**Identification of Conditions of Concern (COCs)**	Y		
	Drainage Study Report	Y		
	Identification of Conditions of Concern	Y		
	Runoff calculations	Y		
7.	**Identify LID Site Design BMPs**	Y		
	Maintain pre-development rainfall runoff characteristics	Y		

No.	Requirement	Applicable? (Y/N)	Addressed? (Y/N)	Comment
	Protect slopes and channels	Y		
8.	**Identify Source Control BMPs**	Y		
	Outdoor material storage areas			
	Trash storage areas			
	IPM – Integrated Pest Management Program			
	Efficient irrigation systems and landscape design			
	Storm drain system stenciling and signage			
9.	**BMPs for Individual Priority Project Categories**	Y		
	Private roads			
	Residential driveways and guest parking			
	Dock areas			
	Maintenance bays			
	Vehicle wash areas			
	Outdoor processing areas			
	Surface Parking Areas			
	Non-retail fueling areas			
	Steep Hillside landscaping			
10.	**Treatment Control BMPs**			
	LEAD method proposed?			
	Numeric sizing standards (design criteria)			
	Treatment Control BMP selection (include target pollutants, justification and alternative analysis)			
	Pollutant removal information (in addition to vendor specifications)			
	Restrictions on use of infiltration BMPs			
	Location of treatment control BMPs			
	Structural Treatment Limited Exclusion?			
	Literature references			
11.	**Storm Water BMP Maintenance**	Y		
General Comments:				
NA – Not applicable (no revision is required) Revisions to the SWMP are required for all those requirements listed in this table as applicable, but identified as not addressed with an N.				

APPENDIX D

SUGGESTED RESOURCES	HOW TO GET A COPY
The County of San Diego Low Impact Development Handbook; Stormwater Management Strategies (2007) Presents guidance for LID stormwater planning and management techniques. Fact Sheets on LID BMPs are provided in the Appendices.	The County of San Diego The Department of Planning and Land Use 5201 Ruffin Road, Suite B San Diego, CA 92123 http://www.sdcounty.ca.gov/dplu/LID_PR.html www.sdcounty.ca.gov/dplu/
Better Site Design: A Handbook for Changing Development Rules in Your Community (1998) Presents guidance for different model development alternatives.	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 410-461-8323 www.cwp.org
California Urban runoff Best Management Practices Handbooks (2003) for Construction Activity, Municipal, and Industrial/Commercial Presents a description of a large variety of Structural BMPs, Treatment Control, BMPs and Source Control BMPs	Los Angeles County Department of Public Works Cashiers Office 900 S. Fremont Avenue Alhambra, CA 91803 626-458-6959 www.cabmphandbooks.org
Caltrans Urban runoff Quality Handbook: Planning and Design Staff Guide (Best Management Practices Handbooks (1998) Presents guidance for design of urban runoff BMPs	California Department of Transportation P.O. Box 942874 Sacramento, CA 94274-0001 916-653-2975
Bioretention Plan (updated 2002) Presents guidance for designing, building, and maintaining bioretention facilities.	Prince George's County Watershed Protection Branch 9400 Peppercorn Place, Suite 600 Landover, MD 20785 http://www.co.pg.md.us/Government/AgencyIndex/DER/ESD/Bioretention/bioretention.asp
Contra Costa Clean Water Program Stormwater C.3 Guidebook Includes an integrated design approach to meet California Stormwater NPDES treatment and hydrograph modification management requirements using Low Impact Development site design techniques and facilities.	Contra Costa Clean Water Program 255 Glacier Drive Martinez, CA 94553 www.cccleanwater.org/construction/nd.php
Design of Stormwater Filtering Systems (1996) by Richard A. Claytor and Thomas R. Schuler Presents detailed engineering guidance on ten different urban runoff-filtering systems.	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 410-461-8323
Development Planning for Stormwater Management, A Plan for the Standard Urban Stormwater Mitigation Plan (SUSMP), (May 2000)	Los Angeles County Department of Public Works http://dpw.co.la.ca.us/epd/ or http://www.888cleanLA.com
Florida Development Plan: A Guide to Sound Land and Water Management (1988) Presents detailed guidance for designing BMPs	Florida Department of the Environment 2600 Blairstone Road, Mail Station 3570 Tallahassee, FL 32399 850-921-9472

SUGGESTED RESOURCES	HOW TO GET A COPY
Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993) Report No. EPA–840-B-92-002. Provides an overview of, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs.	National Technical Information Service U.S. Department of Commerce Springfield, VA 22161 800-553-6847
Guide for BMP Selection in Urban Developed Areas (2001)	ASCE Envir. and Water Res. Inst. 1801 Alexander Bell Dr. Reston, VA 20191-4400 (800) 548-2723
Low-Impact Development Design Strategies - An Integrated Design Approach (June 1999)	Prince George's County, Maryland Department of Environmental Resource Programs and Planning Division 9400 Peppercorn Place Largo, Maryland 20774 http://www.co.pg.md.us/Government/DER/PPD/pgcounty/lidmain.htm
Maryland Stormwater Design Plan (1999) Presents guidance for designing urban runoff BMPs	Maryland Department of the Environment 2500 Broening Highway Baltimore, MD 21224 410-631-3000
National Stormwater Best Management Practices (BMP) Database, Version 1.0 Provides data on performance and evaluation of urban runoff BMPs	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 703-296-6000
National Stormwater Best Management Practices Database (2001)	Urban Water Resources Research Council of ASCE Wright Water Engineers, Inc. (303) 480-1700
Operation, Maintenance and Management of Stormwater Management (1997) Provides a thorough look at storm water practices including, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs.	Watershed Management Institute, Inc. 410 White Oak Drive Crawfordville, FL 32327 850-926-5310
Portland Stormwater Management Plan (2004) Includes design illustrations and criteria for bioretention facilities.	Environmental Services 1120 SW 5th Ave., Rm. 1000 Portland, OR 97204 503-823-7740 http://www.portlandonline.com/bes/index.cfm?c=35122&
Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration	Report No. EPA/600/R-94/051, USEPA (1994).
Preliminary Data Summary of Urban runoff Best Management Practices (August 1999) EPA-821-R-99-012	http://www.epa.gov/ost/stormwater/

SUGGESTED RESOURCES	HOW TO GET A COPY
Reference Guide for Stormwater Best Management Practices (July 2000)	City of Los Angeles Urban runoff Management Division 650 South Spring Street, 7th Floor Los Angeles, California 90014 http://www.lacity.org/san/swmd/
Second Nature: Adapting LA's Landscape for Sustainable Living (1999) by Tree People Detailed discussion of BMP designs presented to conserve water, improve water quality, and achieve flood protection.	Tree People 12601 Mullholland Drive Beverly Hills, CA 90210 (818) 623-4848 Fax (818) 753-4625
Start at the Source (1999) Detailed discussion of permeable pavements and alternative driveway designs presented.	Bay Area Stormwater Management Agencies Association 2101 Webster Street Suite 500 Oakland, CA 510-286-1255 www.basmaa.org
Stormwater Management in Washington State (1999) Vols. 1-5 Presents detailed guidance on BMP design for new development and construction.	Department of Printing State of Washington Department of Ecology P.O. Box 798 Olympia, WA 98507-0798 360-407-7529
Stormwater, Grading and Drainage Control Code, Seattle Municipal Code Section 22.800-22.808, and Director's Rules, Volumes 1-4. (Ordinance 119965, effective July 5, 2000)	City of Seattle Department of Design, Construction & Land Use 700 5th Avenue, Suite 1900 Seattle, WA 98104-5070 (206) 684-8880 http://www.ci.seattle.wa.us/dclu/Codes/sgdccode.htm
Texas Nonpoint Source Book – Online Module (1998)www.txnpsbook.org Presents BMP design and guidance information on-line	Texas Statewide Urban runoff Quality Task Force North Central Texas Council of Governments 616 Six Flags Drive Arlington, TX 76005 817-695-9150
The Practice of Watershed Protection by Thomas R. Shchuler and Heather K. Holland	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 410-461-8323 www.cwp.org
Urban Storm Drainage, Criteria Plan – Volume 3, Best Management Practices (1999) Presents guidance for designing BMPs	Urban Drainage and Flood Control District 2480 West 26th Avenue, Suite 156-B Denver, CO 80211 303-455-6277

APPENDIX E

POTENTIAL PERMANENT TREATMENT BMP MAINTENANCE MECHANISMS

1. Project proponent agreement to maintain storm water BMPs: The City may enter into a contract with the project proponent obliging the project proponent to maintain, repair and replace the storm water BMP as necessary into perpetuity. Security may be required.
2. Assessment districts: The City may approve an Assessment District or other funding mechanism created by the project proponent to provide funds for storm water BMP maintenance, repair and replacement on an ongoing basis. Any agreement with such a District shall be subject to the Public Entity Maintenance Provisions above.
3. Lease provisions: In those cases where the City holds title to the land in question, and the land is being leased to another party for private or public use, the City may assure storm water BMP maintenance, repair and replacement through conditions in the lease.
4. Public entity maintenance: The City may approve a public or acceptable quasi-public entity (e.g., the County Flood Control District, or annex to an existing assessment district, an existing utility district, a state or federal resource agency, or a conservation conservancy) to assume responsibility for maintenance, repair and replacement of the permanent treatment BMP. Unless acceptable to the City, public entity maintenance agreements shall ensure estimated costs are front-funded or reliably guaranteed, (e.g., through a trust fund, assessment district fees, bond, letter of credit or similar means). In addition, the City may seek protection from liability by appropriate releases and indemnities. The City shall have the authority to approve storm water BMPs proposed for transfer to any other public entity within its jurisdiction before installation. The City shall be involved in the negotiation of maintenance requirements with any other public entities accepting maintenance responsibilities within their respective jurisdictions; and in negotiations with the resource agencies responsible for issuing permits for the construction and/or maintenance of the facilities. The City must be identified as a third party beneficiary empowered to enforce any such maintenance agreement within their respective jurisdictions.

The City may accept alternative maintenance mechanisms if such mechanisms are as protective as those listed above.

APPENDIX F

DEFINITIONS

“Attached Residential Development” means any development that provides 10 or more residential units that share an interior/exterior wall. This category includes, but is not limited to: dormitories, condominiums and apartments.

“Automotive Repair Shop” means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.

“Commercial Development” means any development on private land that is not exclusively heavy industrial or residential uses. The category includes, but is not limited to: mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses, hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, automotive dealerships, commercial airfields, and other light industrial complexes.

“Commercial Development greater than 1 acre” means any commercial development that result in the disturbance of one acre or more of land.

“Detached Residential Development” means any development that provides 10 or more freestanding residential units. This category includes, but is not limited to: detached homes, such as single-family homes and detached condominiums.

“Directly Connected Impervious Area (DCIA)” means the area covered by a building, impermeable pavement, and/ or other impervious surfaces, which drains directly into the storm drain without first flowing across permeable vegetated land area (e.g., lawns).

“Environmentally Sensitive Areas” means areas that include, but are not limited to, all Clean Water Act 303(d) impaired water bodies (“303[d] water bodies”); areas designated as an “Area of Special Biological Significance” (ASBS) by the State Water Resources Control Board (*Water Quality Control Plan for the San Diego Basin* (1994) and amendments); water bodies designated as having a RARE beneficial use by the State Water Resources Control Board (*Water Quality Control Plan for the San Diego Basin* (1994) and amendments), or areas designated as preserves or their equivalent under the Multiple Species Conservation Program (MSCP) within the Cities and County of San Diego. The limits of Areas of Special Biological Significance are those defined in the *Water Quality Control Plan for the San Diego Basin* (1994 and amendments). Environmentally sensitive area is defined for the purposes of implementing SUSMP requirements, and does not replace or supplement other environmental resource-based terms, such as “Environmentally Sensitive Lands,” employed by Copermittees in their land development review processes. As appropriate, Copermittees should distinguish between environmentally sensitive area and other similar terms in their Local SUSMPs.

“Hillside” means lands that have a natural gradient of 25 percent (4 feet of horizontal distance for every 1 foot of vertical distance) or greater and a minimum elevation differential of 50 feet, or a natural gradient of 200 percent (1 foot of horizontal distance for every 2 feet of vertical distance) or greater and a minimum elevation differential of 10 feet.

“Hillside development greater than 5,000 square feet” means any development that
would create more than 5,000 square feet of impervious surfaces in hillsides with known erosive soil conditions.

“Hydromodification” means the change in the natural hydrologic processes and runoff characteristics (i.e. interception, infiltration, overland flow, interflow and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and changes in sediment transport. In addition, alternation of stream and river channels, installation of dams and water impoundments, and excessive streambank and shoreline erosion are also considered hydromodification, due to their disruption of natural watershed hydrologic processes….

“Infiltration” means the downward entry of water into the surface of the soil.

“Low Impact Development (LID)” means a stormwater management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect pre-development hydrologic functions.

"Maximum Extent Practicable (MEP)" means the technology-based standard established by Congress in the Clean Water Act 402(p)(3)(B)(iii) that municipal dischargers of urban runoff must meet. MEP generally emphasizes pollution prevention and source control BMPs primarily (as the first line of defense) in combination with treatment

methods serving as a backup (additional lines of defense).

“Natural Drainage” means a natural swale or topographic depression which gathers and/or conveys runoff to a permanent or intermittent watercourse or waterbody.

“New Development” means land disturbing activities; surface grading for structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision.

“Parking Lot” means land area or facility for the temporary parking or storage of motor vehicles used personally, or for business or commerce.

“Projects Discharging to Receiving Waters within Environmentally Sensitive Areas” means all development and significant redevelopment that would create 2,500 square feet of impervious surfaces or increase the area of imperviousness of a project site to 10% or more of its naturally occurring condition, and either discharge urban runoff to a receiving water within or directly adjacent (where any portion of the project footprint is located within 200 feet of the environmentally sensitive area) to an environmentally sensitive area, or discharge to a receiving water within an environmentally sensitive area without mixing with flows from adjacent lands (where the project footprint is located more than 200 feet from the environmentally sensitive area).
“Project Footprint” means the limits of all grading and ground disturbance, including landscaping, associated with a project.

"Receiving Waters" means surface bodies of water, which directly or indirectly receive discharges from urban runoff conveyance systems, including naturally occurring wetlands, streams (perennial, intermittent, and ephemeral (exhibiting bed, bank, and ordinary high water mark)), creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays and the Pacific Ocean. The Copermittee shall determine the definition for wetlands and the limits thereof for the purposes of this definition, provided the Copermittee definition is as protective as the Federal definition utilized by the United States Army Corps of Engineers and the United States Environmental Protection Agency. Constructed wetlands are not considered wetlands under this definition, unless the wetlands were constructed as mitigation for habitat loss. Other constructed BMPs are not considered receiving waters under this definition, unless the BMP was originally constructed in receiving waters.

Construction of treatment control BMPs is prohibited in “Receiving Waters” may not be used to satisfy SUSMP requirements
“Residential Development” means any development on private land that provides living accommodations for one or more persons. This category includes, but is not limited to: single-family homes, multi-family homes, condominiums, and apartments.

“Restaurant” means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirement and hydromodification requirement.

“Sediment” means soils or other surficial materials eroded and then transported or deposited by the action of wind, water, ice, or gravity. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

“Significant Redevelopment” means development that would create,add, or replace at least 5,000 square feet of impervious surfaces on an already developed site that falls under a priority development project categories. Where redevelopment results in an increase of less than 50% of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMP requirements, the numeric sizing criteria discussed in (***) applies only to the addition, and not to the entire development. When redevelopment results in an increase of more than 50% of the impervious surfaces of a previously existing development, the numeric sizing criteria applies to the entire development. Significant redevelopment includes, but is not limited to: the expansion of a building footprint; addition to or replacement of a structure; replacement of an impervious surface that is not part of a routine maintenance activity; and land disturbing activities related with structural or impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Significant redevelopment does not include trenching and resurfacing associated with utility work; resurfacing and reconfiguring surface parking lots; new sidewalk construction, pedestrian ramps, or bikelane on existing roads; and replacement of damaged pavement.

“LID site design BMP” also known as a significant part of Low Impact Development (LID), means any project design feature that reduces the amount of impervious surfaces, disconnects impervious surfaces, reduces creation or severity of potential pollutant sources, and/or reduces the alteration of the project site’s natural flow regime.

Redevelopment projects that are undertaken to remove pollutant sources (such as existing surface parking lots and other impervious surfaces) or to reduce the need for new roads and other impervious surfaces (as compared to conventional or low-density new development) by incorporating higher densities and/or mixed land uses into the project design, are also considered LID site design BMPs.

"Source Control BMP (both structural and non-structural)" means land use or site planning practices, or structures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between pollutants and urban runoff. Examples include roof structures over trash or material storage areas, and berms around fuel dispensing areas.

"Storm Water Best Management Practice (BMP)" means any schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, structural treatment BMPs, and other management practices to prevent or reduce to the maximum extent practicable the discharge of pollutants directly or indirectly to receiving waters. Storm Water BMPs also include treatment requirements, operating procedures and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. This SUSMP groups storm water BMPs into the following categories: LID site design, source control, and treatment control (pollutant removal) BMPs.

"Storm Water Conveyance System" means private and public drainage facilities by which storm water may be conveyed to Receiving Waters, such as: natural drainages, ditches, roads, streets, constructed channels, aqueducts, storm drains, pipes, street gutters, or catch basins.

"Streets, Roads, Highways, and Freeways" means any project that is not part of a routine maintenance activity, and would create a new paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles and other vehicles. For the purposes of SUSMP requirements, Streets, Roads, Highways and Freeways do not include trenching and resurfacing associated with utility work; applying asphalt overlay to existing pavement; new sidewalk, pedestrian ramps, or bikelane construction on existing roads; and replacement of damaged pavement.

"Treatment Control (Structural) BMP" means any engineered system designed and constructed to remove pollutants from urban runoff. Pollutant removal is achieved by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological, or chemical process.

This page intentionally blank

Section 3
Construction SWPPP Standards and Requirements
Table of Contents

Appendices

List of Tables

3.1 Construction SWPPP Standards Introduction

3.1.1 Background Information

The Construction Storm Water Pollution Prevention Plan (SWPPP) standards and requirements described herein were established to ensure construction compliance with the City of Carlsbad Storm Water Ordinance and the Municipal Permit (as issued by the California Regional Water Quality Control Board). This section must be used in conjunction with other sections of this manual to ensure full compliance with both construction and post construction storm water requirements. This section addresses the need for temporary Best Management Practices (BMPs) during construction activities to minimize the mobilization of pollutants such as sediment and to minimize the exposure of storm water to pollutants.

Pursuant to Titles 11, 15 and 18 of the Carlsbad Municipal Code, all construction activities within the City, whether the City issues a construction permit or not, are subject to the provisions of the standards and requirements of this manual.

The water quality protection measures and construction procedures described in this section of the manual are intended to ensure construction activity compliance with the following State and Regional water quality permits:

Municipal Permit -more particularly described as San Diego California Regional Water Quality Control Board San Diego Region Order No. R9-2007-01, NPDES No. CAS0108758 Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority and any amendment, revision or re-issuance thereof; and,

General Construction Permit - more particularly described as NPDES General Permit for Storm Water Discharges Associated with Construction Activity, Water Quality Order No. 99-08-DWQ, NPDES No. CAS000002, issued by the State Water Resources Control Board (Construction General Permit), and any amendment, revision or re-issuance thereof; and,

General Linear Utility Permit - more particularly described as NPDES General Permit for Storm Water Discharges Associated with Construction Activity from Small Linear Underground/Overhead Projects, Water Quality Order 2003-0007 – DWQ, and any amendment, revision or re-issuance thereof.

3.1.2 Standards Applicability to Construction Projects

All construction activities in the City of Carlsbad are subject to the requirements of the Municipal Permit. Construction activities that meet one or more of the following criteria are additionally subject to the requirements of the General Construction Permit. Construction activities that:

1) Disturb one or more acres of land area;
2) Form part of a larger common plan of development that encompasses one or more acres of soil disturbance; or
3) Have the potential for significant water quality impairment.

The General Construction Permit does not apply to routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of an existing facility, nor does it include emergency construction activities required to protect public health and safety. Developers/owners/contractors should confirm with the San Diego Regional Water Quality Control Board (SDRWQCB) staff whether or not a particular routine maintenance activity is subject to the General Construction Permit.

Construction of small linear utility facility projects that are not subject to the General Construction Permit are subject to the requirements of the General Linear Utility Permit. This includes but is not limited to construction of any conveyance pipe for transportation of gaseous, liquid, liquescent or slurry material; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications; and, associated ancillary facilities. Developers/owners/contractors should confirm with the SDRWQCB staff whether or not a particular underground or overhead utility construction project is subject to the General Linear Utility Permit.

3.2 Construction SWPPP Requirements and Approval Process

3.2.1 Construction SWPPP Tier Levels

Every construction activity within the City that has the potential to negatively affect water quality must prepare a construction storm water pollution prevention plan (Construction SWPPP) whether or not the City issues a construction permit for the activity. To ensure compliance with all the various State and Regional permitting regulations, the City established a three-tiered system for the preparation of Construction SWPPPs. The tiers range from Tier 3 representing the highest threat to water quality to Tier 1 representing the lowest threat to water quality. The threshold triggers for each of the three tier levels are generally described below together with a reference to the applicable Construction SWPPP standards.

Tier 3 - Construction activities that impact one or more acres (individually or cumulatively through phased construction) or that pose a significant potential for storm water quality impairment must prepare a Tier 3 Construction SWPPP in conformance with the standards and requirements of the Construction General Permit and City Standards.

Tier 2 – Construction activities that impact less than one acre and that pose a moderate threat to storm water quality must prepare a Tier 2 Construction SWPPP in conformance with City Standards. In the case of small linear underground/overhead utility projects, the project must also demonstrate compliance with the General Linear Utility Permit.

Tier 1 – Construction activities that impact less than one acre and pose a low threat to storm water quality must prepare a Tier 1 Construction SWPPP in conformance with City Standards. In the case of small linear underground/overhead utility projects, the project must also demonstrate compliance with the General Linear Utility Permit.

Exempt - Construction activities that poise no threat to storm water quality are exempt from the preparation of a Construction SWPPP; however, the construction activities must still comply with all construction BMPs required pursuant to Title 15 of the CMC and these standards.

3.2.2 Determination of Construction SWPPP Tier Level

The worksheet entitled “Project Threat Assessment Worksheet for Determination of Construction SWPPP Tier Level”, attached as Appendix A, shall be used to determine the appropriate tier level of Construction SWPPP for a proposed construction project. The worksheet is also used to determine whether the project is exempt from Construction SWPPP requirements.

To make a determination, the project reviewer starts with the assessment criteria located at the top of the worksheet along the left hand column and works downward through the various threat categories and assessment criteria. At the first point where the proposed project makes a match with the assessment criteria, a check is made in the box next to the criteria. The tier level listed in the right hand column in the same row as the selected assessment criteria is the required Construction SWPPP Tier Level for the project.

If none of the boxes in the Significant, Moderate or Low Threat Project Assessment Criteria categories are checked, then the project is exempt from the Construction SWPPP requirements. Proposed construction projects may be considered categorically exempt from the Construction SWPPP requirements when, and if, the project only requires issuance of one or more of the construction permit types shown on Table1 below.

Exempt projects must still comply with all storm water best management practices pursuant to Title 15 of the Carlsbad Municipal Code and City Standards. If in the opinion of the City Engineer, an otherwise exempt project is, or potentially could pose, a threat to storm water quality, the City Engineer may require preparation and implementation of a Construction SWPPP at a tier level commensurate with the storm water threat

Table 1

City Construction Permit Types
Exempt from Construction SWPPP Requirements

Electrical Permit	Patio Deck
Fire Additional Permit	Plumbing Permit
Fire Alarm Permit	Sign Permit
Fixed Systems Permit	Spa – Factory Made
Haul Route Permit	Sprinkler Permit
Mechanical Permit	Water Discharge Permit
Mobile Home Permit	Water Meter Permit
Oversize Load Permit	

Cautionary Note - The Project Threat Assessment Worksheet represents the project proponent's assessment of the threat posed by a proposed construction project. City staff has responsibility for making the final assessment regarding the need for and tier level of Construction SWPPP required The City staff decision is made after submission of the plan review application. A staff determination that the construction plan review application is subject to the preparation of a Construction SWPPP, or is subject to more stringent Construction SWPPP requirement than initially assessed by the applicant (project proponent), will result in the return of the plan review application as incomplete.

If applicants are unsure about the meaning of any of the assessment criteria described in the worksheet or need help in determining how to respond to one or more of the assessment criteria, they are strongly

encouraged to seek assistance from Engineering Department Development Services staff prior to preparation of the Construction SWPPP and submission for construction plan review.

3.2.3 Preparation of a Construction SWPPP

The project proponent is responsible for preparation of the appropriate tier level Construction SWPPP. Tier 2 and Tier 3 Construction SWPPPs shall be prepared in accordance with the requirements of this manual. All Tier 2 and Tier 3 SWPPPs shall be written, amended and certified by a Qualified SWPPP Preparer.

A Qualified SWPPP Preparer shall have one of the following registrations or certifications:

1. A California registered civil engineer,
2. A California registered geologist,
3. A California registered landscape architect,
4. A professional hydrologist registered through the American Institute of Hydrology,
5. A certified professional soil scientist registered through the Soil Science Society of America,
6. A certified professional in erosion and sediment control registered through Certified Professional in Erosion and Sediment Control, Inc.,
7. A certified professional in storm water quality registered through Certified Professional in Erosion and Sediment Control, Inc., or
8. A certified professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies.

Any hydrology or hydraulic calculations, soils reports or geotechnical reports prepared in support of a Tier 2 or Tier 3 Construction SWPPP must be prepared by a professional engineer with appropriate registration qualifications issued by the State of California.

The City Engineer may approve alternative means for establishing the certification of a Qualified SWPPP Preparer for Tier 2 or Tier 3 Construction SWPPPs upon submittal of a letter by the project proponent requesting approval of an alternative certification and presenting due cause why such alternative certification should be considered.

Projects requiring a Tier 1 Construction SWPPP shall use the City's standard Tier 1 Construction SWPPP Template attached as Appendix G. No special qualification is required to prepare a Tier 1 Construction SWPPP.

3.2.4 Storm Water Certification Forms

For non-exempt projects, the project proponent must submit a certified Construction SWPPP (of the appropriate tier level) concurrent with any application for construction plan review including submittals for building plans, public and private improvement plans, grading plans, blasting plans, demolition plans, landscape plans and plans for right-of-way construction activities.

In addition to any other required construction plan review application submittal requirements, the project proponent must submit a completed and signed Storm Water Compliance Certification statement on the form prescribed in this Manual. A separate certification form is used corresponding to each of the three Construction SWPPP tier levels and for exempt projects. Copies of the required Storm Water Compliance Forms for Tier 2 and 3 Construction SWPPPs and for exempt projects are attached as Appendix B. The Storm Water Compliance statement for a Tier 1 Construction SWPPP is incorporated into the City's standard form Tier 1 Construction SWPPP attached as Appendix H.

After submittal of the application, City staff will review the Storm Water Compliance statement and either note concurrence with the proponents threat assessment at the bottom right hand corner of the Storm Water Compliance Form or reject the application as incomplete and return the application submittal package with a written explanation why the project threat assessment should be changed. See Cautionary Note in Section 3.2.1 above.

3.2.5 Project Threat to Storm Water Quality

Before a project construction permit can be issued for any project not found exempt from the Construction SWPPP requirements, a project's perceived threat to storm water quality must be determined. The Municipal Permit mandates that the City provide inspection commensurate with a project's perceived threat to storm water quality. The assessment criteria used to determine a project's perceived threat to storm water quality is not the same as the assessment criteria used to determine the tier level of Construction SWPPP for a project.

The worksheet entitled "Construction Threat Assessment Worksheet for Determination of Project's Perceived Threat to Storm Water Quality", attached as Appendix A, is used to determine the appropriate perceived threat to storm water compliance for a particular project. The perceived threat to storm water quality priority level, determined by the Construction Threat Assessment Worksheet, is directly related to the frequency of storm water compliance inspections required under the Municipal Permit and is one of the factors used in the determination of the City Construction SWPPP inspection fee for a project. For more detailed information on storm water compliance inspections please refer to Section 3.4 of this manual.

3.2.6 Tier 3 Construction SWPPP Requirements

For projects that result in the disturbance of one acre or more of soil (individually or cumulatively through phased construction) and/or are determined to have a significant potential for water quality impairment, a Tier 3 Construction SWPPP shall be prepared in accordance with the requirements of the General Construction Permit and these standards.

3.2.61 Required Elements for Tier 3 Construction SWPPP

A Tier 3 Construction SWPPP must contain all of the elements required by the General Construction Permit, the Municipal Permit and these standards. The *TIER 3 CONSTRUCTION SWPPP REQUIRED ELEMENTS CHECKLIST*, attached as Appendix B, provides a complete listing of the required elements for a Tier 3 Construction SWPPP together with the regulatory source for each listed element. The checklist utilizes the same formatting as the checklist prepared by the State Water Resources Control Board entitled *STORM WATER POLLUTION PREVENTION PLAN AND MONITORING PROGRAM CHECKLIST,* modified to include elements required by the Municipal Permit and these standards.

The checklist is provided as an aid to those unfamiliar in the preparation of a Tier 3 Construction SWPPP. It is a comprehensive list of issues a SWPPP preparer must consider during the development of the document. Many sites, especially small construction sites, will not need to address some of the listed elements because they are not relevant to the site, the construction activities planned, or the construction materials used. The list allows the preparer to consider the applicability of the element to the specific circumstances of the site, and then determine to what extent the element should be addressed in the SWPPP.

The elements in the checklist are derived from Sections A, B, and C of the General Construction Permit, Section D.2. of the Municipal Permit, and these standards. The specific regulatory permit or City Standard section is listed in the second column. The third column indicates the page number(s) in the SWPPP document where the line item element is addressed. If the required element is not applicable to the specific project, then N/A should be noted in the fourth column. The fifth column is a space to note the scheduled date where any specified BMP elements will be implemented.

The use of this checklist does not guarantee compliance with the General Construction Storm Water Permit or these standards. Additionally, using the checklist to generate a Tier 3 Construction SWPPP is not a substitute for knowledge of the permit requirement. The checklist serves as a guidance document only. A site specific Tier 3 Construction SWPPP must be combined with proper and timely installation of the BMPs, thorough and frequent inspections, maintenance, and documentation.

3.2.6.2 Required Format for a Tier 3 Construction SWPPP

A Tier 3 Construction SWPPP shall be formatted in accordance with the SWPPP template included in the latest version of the "*California Stormwater BMP Handbook Construction"* prepared by the California Storm Water Quality Association (CASQA). As an alternative, the developer may use the Construction SWPPP format presented in the latest edition of the "*Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual*" prepared by Caltrans. The developer/owner/applicant must request approval for the use of the Caltrans format prior to submittal.

As an aide to the preparation of a Tier 3 Construction SWPPP document, the preparer may utilize the *Tier 3 CONSTRUCTION SWPPP CASQA FORMAT CHECKLIST (CASQA SWPPP Checklist)* included in Appendix C. The Tier 3 CASQA SWPPP Checklist is used by the City during its review of the Tier 3 Construction SWPPP documents.

The use of the checklist does not guarantee compliance with the General Construction Storm Water Permit or these standards. Additionally, using the checklist to generate a Tier 3 Construction SWPPP is not a substitute for knowledge of the permit requirement. The checklist serves as a guidance document only. A site specific Tier 3 Construction SWPPP must be combined with proper and timely installation of the BMPs, thorough and frequent inspections, maintenance, and documentation.

3.2.6.3 General Construction Permit Compliance Procedures

The General Construction Permit requires certain standard notifications to be made to the San Diego Regional Water Quality Control Board (SDRWQCB) prior to initiation of construction and after completion of construction as follows:

Notice of Intent (NOI) - It is the responsibility of the owner/developer/applicant to obtain coverage under the General Construction Permit through the filing of a Notice of Intent (NOI) with the SDRWQCB prior to commencement of construction activities. After City approval of the Tier 3 Construction SWPPP and prior to signature of the grading plans and/or issuance of grading permit for the project, the owner/developer/applicant shall submit the City approved Tier 3 Construction Permit, a filing fee and other required documentation to the SDRWQCB. Upon filing of the NOI, the project will be assigned a Waste Discharger's Identification (WDID) number by the SDRWQCB. The WDID number must be added into the Tier 3 Construction SWPPP and affixed onto the respective construction plans.

Notice of Termination (NOT) – Upon completion of the construction activity or transfer of ownership, the landowner shall file a NOT with the SDRWQCB certifying that all State and local requirements have been met in accordance with Special Provisions for Construction Activity, C.7, of the General Construction Permit.

Landowners who fail to obtain coverage of the General Construction Permit for storm water discharges to surface waters will be in violation of the CWA and the California Water Code.

To obtain a copy of the General Construction Permit, general information about the permit, fact sheets and copies of the various forms described below, visit the following website:

http://www.swrcb.ca.gov/stormwtr/construction.html

Once at the site click on the highlighted link titled "Construction General Permit, 99-08-DWQ".

3.2.7 Tier 2 Construction SWPPP Requirements

Construction activities that impact less than one acre and pose a moderate threat to water quality (as determined by the moderate threat assessment criteria contained in the Project Threat Assessment Worksheet attached as Appendix A) must prepare a Tier 2 Construction SWPPP in conformance with City Standards. Small linear underground or overhead utility projects must also comply with the requirements of the General Linear Utility Permit.

3.2.7.1 Required Elements for Tier 2 Construction SWPPP

A Tier 2 Construction SWPPP shall contain all of the elements as described on the "TIER 2 CONSTRUCTION SWPPP CHECKLIST" attached as Appendix G.

The use of the checklist does not guarantee compliance with these standards. The checklist serves as a guidance document only. A site specific Tier 2 Construction SWPPP must be combined with proper and timely installation of the BMPs, thorough and frequent inspections, maintenance, and documentation.

3.2.7.2 Required Format for Tier 2 Construction SWPPP

A Tier 2 Construction SWPPP shall be formatted in accordance with the template attached as Appendix E.

For small linear utility construction project subject to the General Linear Utility Permit, the project proponent shall follow the requirements of the General Linear Utility Permit for preparation of a Tier 2 Construction SWPPP. The Tier 2 SWPPP specified in the General Linear Utility Permit shall be submitted to the City in lieu of the City standard form Tier 2 Construction SWPPP.

3.2.8 Tier 1 Construction SWPPP Requirements

Construction activities that impact less than one acre and pose a low threat to water quality (as determined by the low threat assessment criteria contained in the Project Threat Assessment Worksheet attached as Appendix A) must prepare a standard format Tier 1 Construction SWPPP in conformance with City Standards. Small linear underground or overhead utility projects must also comply with the requirements of the General Linear Utility Permit.

3.2.8.1 Required Standard Format for Tier 1 Construction SWPPP

A Tier 1 Construction SWPPP shall utilize the standard form Tier 1 Construction SWPPP template attached as Appendix H. The standard form template includes the two legal sized sheets containing standard storm water prevention construction notes, a project information block, a Storm Water Compliance Statement, City approval block and a Best Management Practice (BMP) Checklist Table.

A Tier 1 level project that receives a "low perceived threat to storm water quality" rating as determined by the Construction Threat Assessment Worksheet, attached as Appendix C, need only complete and sign the first two sheets of the template. A Tier 1

level project that receives a “medium perceived threat to storm water quality” rating as determined by the Construction Threat Assessment Worksheet must additionally, attach a site plan map sheet(s) showing the proposed construction site and depicting the areas of proposed construction and proposed location of structural BMPs. For a more detail description regarding the site plan requirements, see the site plan instruction sheet included with the template in Appendix H.

For all Tier 1 Construction SWPPPs, the property owner or owner’s agent must complete the information in the Project Information block, check the appropriate boxes in the BMP Checklist Table and fill out and sign the Storm Water Compliance Statement. The form is intended to be completed as an “over the counter” type document for processing of construction permits for projects with a “low perceived threat to storm water quality”. Projects with a “medium perceived threat to storm water quality”, may require additional staff time to review the site plan included with the Tier 1 Construction SWPPP.

The BMP Checklist Table on page two of the standard form template is intended to be completed by the project proponent. The project proponent begins by checking the box to the left of each construction activity that will be performed during construction of the proposed project. Then, for each checked activity, the project proponent will pick one or more of the BMPs described along the top of the table that will be used to prevent storm water pollution resulting from that specific activity. The project proponent will then make a check in the box along the particular construction activity row that corresponds with the column for each BMP selected to help mitigate the potential storm water pollution effects of the activity. This process is repeated until all appropriate BMP boxes have been checked corresponding to each of the checked construction activities. Blank columns are included on the form to allow the applicant to add additional proposed BMPs not included on the standard table.

The owner/developer/contractor performing the construction work is responsible for ensuring that each of the selected BMPs is appropriately incorporated into the project during construction. The use of the BMP Checklist Table does not guarantee compliance with these standards. The BMP Checklist Table serves as a guidance document only. Additional BMPs may be required if the selected BMP(s) are shown to be ineffective or not relevant to a particular construction activity.

For small linear utility construction project subject to the General Linear Utility Permit, the project proponent shall follow the requirements of the General Linear Utility Permit for preparation of a Tier 1 Construction SWPPP. The Tier 1 SWPPP specified in the General Linear Utility Permit shall be submitted to the City in lieu of the City standard form Tier 1 Construction SWPPP.

3.2.9 General Linear Utility Permit Compliance Procedures

The General Linear Utility Permit requires certain standard notifications to be made to the San Diego Regional Water Quality Control Board (SDRWQCB) prior to initiation of construction and after completion of construction as described below. To obtain a copy of the General Linear Utility Permit, general information about the permit, fact sheets and copies of the various forms described below, visit the following website:

http://www.swrcb.ca.gov/stormwtr/construction.html

Once at the site click on the highlighted link titled “Small LUP General Permit”.

3.2.9.1 Notice of Intent (NOI)

It is the responsibility of the owner/developer/applicant to obtain coverage under the General Linear Permit through the filing of a Notice of Intent (NOI) with the SDRWQCB prior to commencement of construction activities. After City approval of the Tier 2 or Tier 1Construction SWPPP and prior to issuance of grading and/or right-of-way permit for the project, the project proponent shall submit the City approved Construction Permit, a filing fee and other required documentation to the SDRWQCB. Upon filing of the NOI, the project will be assigned a Waste Discharger’s Identification (WDID) number by the SDRWQCB. The WDID number must be added into the Construction SWPPP and affixed onto the respective construction plans

3.2.9.2 General Linear Utility Permit - Tier 1 SWPPP

A single Tier 1 SWPPP prepared in accordance with the General Linear Utility Permit may authorize construction of any number of small utility projects. The Notice of Intent (NOI) and corresponding WDID number remains in effect until the discharger requests termination and such termination request is approved by the SDRWQCB.

3.2.9.2.1 Linear Construction Activity Notification (LCAN)

Prior to initiation of construction for each small utility project covered by the Tier 1 SWPPP, the discharger must submit a LCAN to the SDRWQCB prior to start of construction on the form provided for such purpose by the SDRWQCB. Alternatively, the discharger may submit a LCAN at least quarterly listing multiple small utility projects that will be constructed during the next quarter.

3.2.9.2.2 Linear Construction Termination Notification (LCTN)

At the conclusion of construction of small utility project covered by a Tier 1 SWPPP, the discharger must file a LCTN with the SDRWQCB certifying that the site was in full compliance with the requirements of the General Linear Utility Permit. The discharger may submit a single LCTN for multiple projects completed over a specified period of time. The LCTN submittal must include all required documentation requested by the SDRWQCB.

3.2.9.3 Notice of Termination (NOT)

Upon completion of the construction activity the discharger shall file a NOT with the SDRWQCB certifying that all construction activities were completed in full compliance with the requirements of the General Linear Utility Permit. For Tier 1 SWPPPs, filing of the NOT, and approval of the NOT by the SDRWQCB, will terminate permit coverage and work on additional small utility projects will no longer be permitted without obtaining an new Tier 1 or Tier 2 SWPPP. A NOT for a Tier 2 SWPPP indicates that the specified small utility project is complete and all work was done in compliance with the General Linear Utility Permit. When filing the NOT dischargers must use the NOT forms provided by the SDRWQCB.

3.2.9.4 City General Operating Permit (GOP)

The City's GOP procedures are intended to provide a mechanism for utility operators to conduct routine maintenance operations under a single permit. To avoid the need for preparing and processing separate Construction SWPPPs for each routine maintenance operation, the City will allow preparation of a single Tier 1 Construction SWPPP to cover multiple small utility projects. The process will follow the same procedures as for a Tier 1 SWPPP prepared and processed in accordance with City Standards and the requirements of the General Linear Utility Permit.

The notification procedures described above shall apply with the following addition:

1. A copy of each LCAN shall be faxed to the City Construction Management and Inspection Division a minimum of 24 hours prior to start of construction. A copy of the fax notification shall be kept at the construction site. The copy shall be presented and shown upon demand to any City Official for verification of authority to work. A lack of 24-hour notification to the City for intended work may subject the operator to a stop-work notice.
2. A copy of the LCTN shall be submitted to the City Construction Management and Inspection Division concurrent with its submittal to the RWQCB.
3. A copy of the NOT shall be submitted to the City Construction Management and Inspection Division concurrent with its submittal to the RWQCB.

Any Small Utility Project that meets the requirements of a Tier 2 SWPPP pursuant to the General Linear Utility Permit requirements shall process a Tier 2 SWPPP consistent with Tier 2 Construction SWPPP procedures described above.

3.3 Construction BMP Standards

3.3.1 Background Information

Construction Best Management Practices (BMPs) are the schedules of activities, prohibitions of practices, maintenance procedures and other management practices employed during construction activities to prevent or reduce pollution of the ocean, lagoons, lakes, streams and other sensitive water bodies and water courses. Construction BMPs also include the physical devices and structural construction control measures designed to prevent soil erosion from occurring or to contain sediment before it leaves the construction site. The BMPs required pursuant this manual are also intended to protect the health, safety and welfare of the public and to prevent damage to adjoining public and private property resulting from construction activities.

The City of Carlsbad has adopted the California Stormwater Quality Association "Construction Stormwater Best Management Practice Handbook" (CASQA Construction Handbook) latest edition as its preferred source for construction BMPs. All BMP reference numbers used in this manual correspond to the BMP Fact Sheets included within the CASQA Construction Handbook unless specifically noted otherwise. With the approval of the City Engineer, or his/her designee, the City may accept comparable BMPs from reputable alternative sources such as Caltrans.

This manual is not intended as a comprehensive engineering or design manual on BMPs. The engineer or other qualified person, who prepares the Construction SWPPP, must utilize their individual knowledge and experience of BMPs together with the tools and reference materials described in this manual, or found elsewhere, to prepare an appropriate and adequate Construction SWPPP document.

The BMP categories below coincide with the BMP categories described in the CASQA Construction Handbook and provide a kind of checklist of the BMPs that are to be included in a Construction SWPPP. The combination or suite of BMPs that are included in a Construction SWPPP must reflect the specific conditions at the proposed construction site. An effective SWPPP includes a suite of BMPs that are designed to work together.

3.3.2 Minimum BMP Requirements

In accordance with the Municipal Permit, minimum BMPs must be installed for all projects to be implemented year-round. Because all sites, regardless of the priority, must be protected to prevent discharges to the maximum extent practicable, the minimum BMP requirements are the same for all projects requiring a Construction SWPPP. Each site must be protected by an effective combination of erosion and sediment controls, non-storm water management, materials and waste management controls, and general site management controls. The sections following this section

describe the minimum BMPs for each of the above listed BMP types that must be incorporated into each Construction SWPPP prepared in accordance with these standards.

If particular BMPs are infeasible at any specific site, the owner/developer/contractor must install other equivalent BMPs. At any time of the year, an inactive site must be fully protected from erosion and discharges of sediment. A site will be considered inactive if construction activities have ceased for a period of ten or more consecutive days. It is also the owner/developer/contractors responsibility at both active and inactive sites to implement a plan to address all potential storm water and non-storm water discharges.

3.3.3 Erosion and Sediment Control BMPs

Erosion and sediment control BMPs are the structural and non-structural practices used during the construction process to keep sediment in place (erosion control) and to capture any sediment that is moved by stormwater before it leaves the site (sediment control). Erosion controls, keeping soil where it is, are the heart of any effective Construction SWPPP. The Construction SWPPP should rely on erosion controls as the primary means of preventing stormwater pollution. Sediment controls provide a necessary second line of defense to properly designed and installed erosion controls.

3.3.3.1 Erosion Control BMPs

Erosion control is any source control practice that protects the soil surface and prevents soil particles from being detached by rainfall, flowing water or wind. Erosion control is referred to as soil stabilization. Erosion control consists of preparing the soil surface and implementing one or more of the BMPs shown in Table 2.

All inactive soil-disturbed areas on the project site, and most active areas prior to the onset of rain, must be protected from erosion. Soil disturbed areas may include relatively flat areas as well as slopes. Typically, steep slopes and large exposed areas require the most robust erosion controls; flatter slopes and smaller areas still require protection, but less costly materials may be appropriate for these areas, allowing savings to be directed to the more robust BMPs for steep slopes and large exposed areas. To be effective, erosion control BMPs must be implemented at slopes and disturbed areas to protect them from concentrated flows.

Table 2
Erosion Control BMPs

CASQA BMP#	BMP Name
EC-1	Scheduling
EC-2	Preservation of Existing Vegetation
EC-3	Hydraulic Mulch
EC-4	Hydroseeding
EC-5	Soil Binders
EC-6	Straw Mulch
EC-7	Geotextiles & Mats
EC-8	Wood Mulching
EC-9	Earth Dikes and Drainage Swales
EC-10	Velocity Dissipation
EC-11	Slope Drains
EC-12	Streambank Stabilization
EC-13	Polyacrylamide

Some erosion control BMPs can be used effectively to temporarily prevent erosion by concentrated flows. These BMPs, used alone or in combination, prevent erosion by intercepting, diverting, conveying, and discharging concentrated flows in a manner that prevents soil detachment and transport. Temporary concentrated flow conveyance controls may be required to direct run-on around or through the project in a non-erodible fashion. Temporary concentrated flow conveyance controls include EC-9 (Earth Dikes and Drainage Swales), EC-10 (Velocity Dissipation Devices) and EC-11 (Slope Drains).

3.3.3.2 Sediment Control BMPs

Sediment control is any practice that traps soil particles after they have been detached and moved by rain, flowing water, or wind. Sediment control measures are usually passive systems that rely on filtering or settling the particles out of the water or wind that is transporting them. Sediment control practices include the BMPs listed in Table 3.

Table 3
Sediment Control BMPs

CASQA BMP#	BMP Name
SE-1	Silt Fence
SE-2	Sediment Basin
SE-3	Sediment Trap
SE-4	Check Dam
SE-5	Fiber Rolls
SE-6	Gravel Bag Berm
SE-7	Street Sweeping and Vacuuming
SE-8	Sandbag Barrier
SE-9	Straw Bale Barrier
SE-10	Storm Drain Inlet Protection
SE-11	Chemical Treatment

Sediment control BMPs include those practices that intercept and slow or detain the flow of stormwater to allow sediment to settle and be trapped. Sediment control practices can consist of installing linear sediment barriers (such as silt fence, sandbag barrier, and straw bale barrier); providing fiber rolls, gravel bag berms, or check dams to break up slope length or flow; or constructing a sediment trap or sediment basin. Linear sediment barriers are typically placed below the toe of exposed and erodible slopes, down-slope of exposed soil areas, around soil stockpiles, and at other appropriate locations along the site perimeter.

A few BMPs may control both sediment and erosion, for example, fiber rolls and sand bag barriers. The CASQA Construction Handbook classifies these BMPs as either erosion control (EC) or sediment control (SC) based on the BMPs most common and effective use. Sediment control BMPs are most effective when used in conjunction with erosion control BMPs. The combination of erosion control and sediment control is usually the most effective means to prevent sediment from leaving the project site and potentially entering storm drains or receiving waters. The City of Carlsbad requires that the discharger implement an effective combination of erosion and sediment controls.

Under limited circumstances, sediment control, alone may be appropriate. For example, applying erosion control BMPs to an area where excavation, filling, compaction, or grading is currently under way may not be feasible when storms come unexpectedly. Use of sediment controls by establishing perimeter control on these areas may be appropriate and allowable provided the following conditions are met:

- Weather monitoring is under way.
- Inactive soil-disturbed areas have been protected with an effective combination of erosion and sediment controls.
- An adequate supply of sediment control materials is stored on-site and there are sufficient forces of labor and equipment available to implement sediment controls on the active area prior to the onset of rain.
- The SWPPP adequately describes the methods to protect active areas.

3.3.3.3 Wind Erosion Control BMPs

Wind erosion control consists of applying water or other dust palliatives to prevent or alleviate dust nuisance. Wind erosion control best management practices BMPs are shown in Table 4.

Table 4
Wind Erosion Control BMPs

CASQA BMP#	BMP Name
WE-1	Wind Erosion Control

Other BMPs that are sometimes applied to disturbed soil areas in order to control wind erosion are BMPs EC-2 through EC-7, shown in Section 3.3.2.1 above. Be advised that many of the dust palliatives may contain compounds that have an unknown effect on stormwater. A sampling and analysis protocol to test for stormwater contamination from exposure to such compounds is required in the SWPPP.

3.3.3.4 Tracking Control BMPs

Tracking control consists of preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. Tracking control best management practices (BMPs) are shown in Table 5.

Table 5
Tracking Control BMPs

CASQA BMP#	BMP Name
TR-1	Stabilized Construction Ingress/Egress
TR-2	Stabilized Construction Roadway
TR-3	Ingress/Egress Tire Wash

Attention to control of tracking sediment off site is highly recommended, as dirty streets and roads near a construction site create a nuisance to the public and generate constituent complaints to elected officials and regulators. These complaints often result in immediate inspections and regulatory actions.

3.3.4 Non-Storm Water Management BMPs

Carlsbad Standards prohibit the discharge of materials other than stormwater and authorized non-stormwater discharges. It is recognized that certain non-stormwater discharges may be necessary for the completion of construction projects. Such discharges include but are not limited to irrigation of vegetative erosion control measures, pipe flushing and testing, and street cleaning.

Non-stormwater management BMPs are source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source or eliminating off-site discharge. These practices involve day-to-day operations of the construction site and are usually under the control of the contractor. These BMPs are also referred to as "good housekeeping practices" which involve keeping a clean, orderly construction site.

Non-stormwater management BMPs also include procedures and practices designed to minimize or eliminate the discharge of pollutants from vehicle and equipment cleaning, fueling, and maintenance operations to stormwater drainage systems or to watercourses.

Table 6 lists standard non-stormwater management BMPs. All these BMPs must be implemented depending on the conditions and applicability of deployment described as part of the BMP.

Table 6
Non-Storm Water Management BMPs

CASQA BMP#	BMP Name
NS-1	Water Conservation Practices
NS-2	Dewatering Operations
NS-3	Paving and Grinding Operations
NS-4	Temporary Stream Crossing
NS-5	Clear Water Diversion
NS-6	Illicit Connection/Discharge
NS-7	Potable Water/Irrigation
NS-8	Vehicle and Equipment Cleaning
NS-9	Vehicle and Equipment Fueling
NS-10	Vehicle and Equipment Maintenance
NS-11	Pile Driving Operations
NS-12	Concrete Curing
NS-13	Concrete Finishing
NS-14	Material and Equipment Use
NS-15	Demolition Adjacent to Water
NS-16	Temporary Batch Plants

It is recommended that owners and contractors be vigilant regarding implementation of these BMPs, including making their implementation a condition of continued employment, and part of all prime and subcontract agreements. By doing so, the chance of inadvertent violation by an uncaring individual can be prevented, potentially saving thousands of dollars in fines and project delays. Also, if procedures are not properly implemented and/or if BMPs are compromised then the discharge is subject to sampling and analysis requirements contained in the General Construction Permit.

3.3.5 Waste Management and Materials Pollution Control BMPs

Waste management and materials pollution control BMPs, like non-stormwater management BMPs, are source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source before they come in contact with stormwater. These BMPs also involve day-to-day operations of the construction site, are under the control of the contractor, and are additional "good housekeeping practices" which involve keeping a clean, orderly construction site.

Table 7
Waste Management and Materials Pollution Control BMPs

CASQA BMP#	BMP Name
WM-1	Material Delivery and Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention and Control
WM-5	Solid Waste Management
WM-6	Hazardous Waste Management
WM-7	Contaminated Soil Management
WM-8	Concrete Waste Management
WM-9	Sanitary/ Septic Waste Management
WM-10	Liquid Waste Management

Waste management consists of implementing procedural and structural BMPs for handling, storing, and disposing of wastes generated by a construction project. The objective is to prevent the release of waste materials into stormwater runoff or discharges through proper management of the following types of wastes:

- Solid
- Sanitary
- Hazardous
- Equipment-related wastes

Materials pollution control (also called materials handling) consists of implementing procedural and structural BMPs in the handling, storing, and the use of construction materials. The BMPs are intended to prevent the release of pollutants during stormwater and non-stormwater discharges. The objective is to prevent or reduce the opportunity for contamination of stormwater runoff from construction materials by covering and/or providing secondary containment of storage areas, and by taking adequate precautions when handling materials. These controls must be implemented for all applicable activities, material usage, and site conditions.

Table 7 lists the waste management and materials pollution control BMPs. It is important to note that these BMPs should be implemented depending on the conditions/applicability of deployment described as part of the BMP.

3.3.6 General Site Management Requirements

Every construction site shall implement the following minimum general site management requirements:

1. Emphasize pollution prevention where appropriate; and,

2. Implement all the requirements of the site approved Construction SWPPP to manage storm water and non-storm water discharges from the site at all times; and,
3. Minimize areas that are cleared and graded to only the portion of the site that is necessary for construction; and,
4. Minimize exposure time of disturbed soil areas; and,
5. Minimize grading during the wet season and coincide grading with seasonal dry weather periods to the extent feasible. If grading does occur during the wet season, then implement additional BMPs for any rain events that may occur; and,
6. Limit he amount of exposed soil allowed at one time to the amount that which can be adequately protected by deploying standby erosion control and sediment control BMPs prior to a predicted rainstorm; and,
7. Temporarily stabilize and/or re-seed disturbed soil areas as rapidly as possible; and,
8. Preserve the natural hydrologic features of the site where feasible; and,
9. Preserve riparian buffers and corridors where feasible; and,
10. Maintain all BMPs until removed; and,
11. Retain, reduce and properly manage all pollutant discharges on-site to the MEP standard.

3.3.6.1 Dry Season Site Management Requirements

The following minimum BMPs must be in place at all construction sites throughout the year during both the wet and dry seasons:

1. All graded areas must have erosion protection BMPs properly installed
2. Adequate perimeter protection BMPs must be installed and maintained.
3. Adequate sediment control BMPs must be installed and maintained.
4. Adequate BMPs to control offsite sediment tracking must be installed and maintained.
5. A minimum of 125% of the material needed to install standby BMPs to protect the exposed areas from erosion and prevent sediment discharges, must be stored onsite. Areas already protected from erosion using physical stabilization or established vegetation stabilization BMPs are not considered to be “exposed” for purposes of this requirement.
6. The owner/developer/contractor must have an approved “weather triggered” action plan and be able to deploy standby BMPs to completely protect the exposed portions of the site within 48 hours of a predicted storm event (a predicted storm event is defined as a forecasted, 40% chance of rain by 5-day National Weather Service). On request, the owner/developer/contractor must provide proof of this capability that is acceptable to the City.
7. Deployment of physical or vegetation erosion control BMPs must commence as soon as slopes are completed. The project proponent may not continue to rely on the ability to deploy standby BMP materials to prevent erosion of slopes that have been completed.
8. The area that can be cleared, graded, and left exposed at one time is limited to the amount of acreage that the contractor can adequately protect prior to a predicted rainstorm. For larger sites, grading should be phased (See Section 3.3.8). It may be necessary to deploy erosion and sediment control BMPs in

areas that are not completed, but are not actively being worked before additional grading is done.

3.3.6.2 Rainy Season Site Management Requirements

In addition to the dry season requirements described above, the following additional minimum BMPs must be in place at all sites during the rainy season, which is defined as October 1st through April 30th:

1) Erosion control, perimeter protection and sediment control BMPs must be upgraded if necessary to provide sufficient protection for storms likely to occur during the rainy season.
2) Adequate physical or vegetation erosion control BMPs must be installed and established for all completed slopes prior to the start of the rainy season. These BMPs must be maintained throughout the rainy season. If a selected BMP fails, it must be repaired and improved, or replaced with an acceptable alternate as soon as it is safe to do so. The failure of a BMP indicates it was not adequate for the circumstances in which it was used. Repairs or replacements must therefore put a more robust BMP in place.
3) The amount of exposed soil allowed at one time shall not exceed that which can be adequately protected by deploying standby erosion control and sediment control BMPs prior to a predicted rainstorm.
4) A disturbed area that is not completed but that is not being actively graded must be fully protected from erosion if left for 10 or more days. The ability to deploy standby BMP materials is not sufficient for these areas. BMPs must actually be deployed.
5) All vegetation erosion control must be established prior to the rainy season to be considered as an effective BMP.

3.3.7 Additional Controls for Construction Sites

For project sites that are tributary to 303(d) water body segments that are impaired for sediment, the following BMPs must be implemented at all times to the maximum extent possible:

- Maintain vegetative cover as much as possible by developing the project in a phased approach to reduce the amount of exposed soil at any one time.
- Limit the areas of active construction to five acres at any one time.
- Provide 100 percent soil cover for all areas of inactive construction throughout the entire time of construction, on a year-round basis.
- Provide appropriate perimeter control at all appropriate locations along the site perimeter and at all inlets to the storm drain system at all times during the rainy season.
- Provide vegetated buffer strips between the active construction area and any water bodies.
- Provide stabilized construction entrances and limit all vehicle and foot traffic to those entrances.

Where the provisions described above can not be accommodated, additional or supplemental controls shall be recommended. The City Engineer or designee shall have the authority to approve supplemental or alternative control methods based upon an evaluation of the proposed control and the sites potential threat to storm water quality impairment.

3.3.8 Maximum Disturbed Area for Erosion Control

The active disturbed soil area of any project site shall be not more than 50 acres for an individual grading permit or a combination of grading permits under an associated Tentative or Final Map. The City may approve, on a case-by-case basis, expansions of the active disturbed soil area limit if adequate site protection is demonstrated. At all times, sufficient soil stabilization and sediment control materials shall be maintained on site to provide adequate site protection.

3.3.9 Advanced Treatment Methods

Advanced Treatment is defined in the Municipal Permit as the use "of mechanical or chemical means to flocculate and remove suspended sediment from runoff from construction sites prior to discharge."

If a project meets all of the following criteria, advanced treatment will be required:

1. All or part of the site is within 200 feet of waters named on the CWA Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity;
2. The disturbance area is greater than five acres, including all phases of the development;
3. The disturbed slopes are steeper than 4:1 with at least 10 feet of relief, and drain toward a Section 303(d) listed receiving water for sedimentation or turbidity;
4. The site contains a predominance of soils with USDA-NRCS Erosion factors k_f greater than or equal to 0.4.

Advanced treatment may be required on sites that do not meet all four of the criteria for exceptional threat to water quality listed above at the discretion of the City Engineer based on a record on non-compliance.

Treatment effluent water quality shall meet or exceed the water quality objectives for sediment, turbidity, pH, and toxicity as listed in the Water Quality Control Plan for the San Diego Basin (9) for inland surface waters and lagoons and estuaries for the appropriate hydrologic unit.

Prior to obtaining a grading permit, the applicant shall submit, to the satisfaction of the City Engineer, the following:

1. An operations and maintenance schedule for all advanced treatment methods.

2. A monitoring plan for all required BMPs and water quality for all proposed work deemed necessary to achieve project water quality goals.
3. A written training plan for certification and documentation of necessary training and refreshers of staff.

The discharger shall either deploy Advanced Treatment Methods or comply with source control procedures described below.

- Maintain vegetative cover as much as possible by developing the project in a phased approach to reduce the amount of exposed soil at any one time.
- Limit the areas of active construction to five acres at any one time.
- Provide 100 percent soil cover for all areas of inactive construction throughout the entire time of construction, on a year-round basis.
- Provide appropriate perimeter control at all appropriate locations along the site perimeter and at all inlets to the storm drain system at all times during the rainy season.
- Provide vegetated buffer strips between the active construction area and any water bodies.
- Provide stabilized construction entrances and limit all vehicle and foot traffic to those entrances.

3.3.10 City Standard Water Pollution Prevention Notes

All Tier 2 and Tier 3 Construction SWPPPs shall include the City Standard Storm Water Pollution Prevention notes as specified in Appendix I. The notes shall be placed upon the Construction SWPPP drawing or, in the case of a Tier 3 Construction SWPPP, on the grading plan. The Qualified Plan Preparer may include supplemental Storm Water Pollution Prevention notes to address specific requirements of the proposed project and/or construction site. The City Engineer or designee may also request inclusion of supplemental Storm Water Pollution Prevention notes to address specific construction activities or site issues.

3.4 Storm Water BMP Inspection and Maintenance

3.4.1 General information

Construction is a dynamic operation where changes are expected. Storm water BMPs for construction sites are usually temporary measures that require frequent maintenance to maintain their effectiveness and may require relocation, revision and re-installation, particularly as project grading progresses. Therefore, in addition to City inspections, owner/developer/contractor self- inspections are required.

3.4.2 Inspection of Construction Sites

All construction sites are subject to site inspection by City staff in accordance with the Carlsbad Municipal Code, the Municipal Permit, City's policies and procedures and these standards. Additionally, owner/developer/contractors are required to perform self-inspection of construction sites, for projects requiring a Tier 2 or Tier 3 Construction SWPPP, in accordance with these standards.

The City of Carlsbad will evaluate the adequacy of the owner's/contractor's site management for storm water pollution prevention, inclusive of BMP implementation, on construction sites based on performance standards for storm water BMPs. Poor BMP practices shall be challenged. Performance standards shall include:

1. Prevent increase in pollution to the maximum extent practicable.
2. Minimize slope erosion.
3. Control discharge velocities moving offsite to limit down stream erosion potential to the pre-construction levels.

3.4.3 City Storm Water BMP Inspection Frequency

Each construction site must be inspected by City staff for compliance with storm water standards at the minimum frequency as shown in Table 8. Site-specific inspection frequencies are reevaluated periodically, particularly when grading activities are being conducted during the rainy season. The need for additional inspections may vary depending upon several factors including:

- Site conditions;
- Previous violations;
- History of developer or contractor past performance;
- Grading during rainy season; and,
- Weather patterns.

Table 8		
	Inspection Frequency	
Site Threat to Water Quality	**Rainy Season Oct 1st – April 30th**	**Dry Season May 1st – September 30th**
High	Bi-weekly	As-needed
Medium	Monthly	As-needed
Low	As-needed	As-needed

The minimum inspection frequency is based upon a project's perceived Threat to Water Quality (TTWQ) and whether or not the construction occurs during the wet or dry season. Each project site is assigned one of three priorities to describe its TTWQ - low, medium or high. The worksheet entitled "Construction Threat Assessment Worksheet for Determination of Project's Perceived Threat to Water Quality", attached as Appendix A, is used to determine a construction site's TTWQ priority.

3.4.4 City Storm Water BMP Inspection Requirements

City inspection of construction sites for storm water compliance shall include, but not be limited to the following:

1. Assessment of BMP effectiveness including implementation of an effective combination of erosion, sediment and non-stormwater BMPs to meet the City's minimum water quality protection requirements and prevent the discharge of pollutants into storm water and receiving waters, and
2. Check for coverage under the General Construction Permit (Regional Board Notice of Intent (NOI) and/or Waste Discharge Identification No. (WDID No.)) during initial inspection;
3. Ensure compliance with the City's applicable ordinances, permits and other site-specific requirements;
4. Visual observations for non-stormwater discharges, potential illicit connections and potential discharge of pollutants in stormwater runoff;
5. Ensure proper implementation of plans and specifications,
6. Education and outreach on stormwater pollution prevention as needed;
7. Ensure that the project proponents implement their stormwater management on a year-round basis, and;
8. Creation of a written or electronic inspection report

City inspection staff will utilize the following framework when conducting an inspection:

1. Review the site erosion control and BMP implementation plans and determine whether they are being properly implemented;
2. Determine if BMPs are being used in accordance with the intent of all laws and approved plans;

3. Determine whether BMPs are effectively being implemented and maintained properly; and
4. Determine whether the owner/developer/contractor is making appropriate adjustments when ineffective BMPs are found.

For projects subject to the State General Construction Permit, the RWQCB is responsible for verifying and enforcing requirements of the General Construction Permit. The City inspection staff will continue to work with RWQCB staff in assuring compliance at these sites. City staff will document observations of potential violations and will notify the RWQCB of the noncompliance in accordance with Order R9-2007-0001 if the noncompliance poses a threat to human or environmental health.

Regardless of any inspections conducted by the City, property owners or contractors are required to prevent any construction-related materials, trash, wastes, spills or residues from entering a storm water conveyance system.

3.4.5 Qualified Person Required

All construction sites requiring a Tier 2 or Tier 3 Construction SWPPP are required to employ a Qualified Person to ensure proper installation and maintenance of the project BMPs. The Qualified Person shall:

1. Be trained and competent in the use of BMPs, shall be on site daily, although not necessarily full time, to evaluate the conditions of the site with respect to storm water pollution prevention. This qualified contact person shall represent the contractor/owner on storm water issues.

2. Shall implement the conditions of the Storm Water Pollution Prevention Plan, contract documents and/or local ordinances with respect to erosion and sediment control and other waste management regulations.

3. Be responsible for monitoring the weather and implementation of any emergency plans as needed. The weather shall be monitored on a 5-day forecast plan and a full BMP protection plan shall be activated when there is a 40% chance of rain.

4. Be responsible for overseeing any site grading and operations and evaluating the effectiveness of the BMPs. This person shall modify the BMPs as necessary to keep the dynamics of the site in compliance. This person or other qualified persons are responsible for checking the BMPs routinely for maintenance and documenting the BMPs being implemented.

Appendix A

Project Threat Assessment Worksheet for Determination of Construction SWPPP Tier Level

Project Threat Assessment Worksheet for Determination of Construction SWPPP Tier Level

Project Storm Water Threat Assessment Criteria*	Construction SWPPP Tier Level
Significant Threat Assessment Criteria ❑ My project includes clearing, grading or other disturbances to the ground resulting in soil disturbance totaling one or more acres including any associated construction staging, equipment storage, stockpiling, pavement removal, refueling and maintenance areas; or, ❑ My project is part of a phased development plan that will cumulatively result in soil disturbance totaling one or more acres including any associated construction staging, equipment storage, refueling and maintenance areas; or, ❑ My project is located inside or within 200 feet of an environmentally sensitive area (see City ESA Proximity map) and has a significant potential for contributing pollutants to nearby receiving waters by way of storm water runoff or non-storm water discharge(s).	Tier 3
Moderate Threat Assessment Criteria My project does not meet any of the Significant Threat Assessment Criteria described above and meets one or more of the following criteria: ❑ Project requires a grading plan pursuant to the Carlsbad Grading Ordinance (Chapter 15.16 of the Carlsbad Municipal Code); or, ❑ Project will result in 2,500 square feet or more of soils disturbance including any associated construction staging, stockpiling, pavement removal, equipment storage, refueling and maintenance areas and project meets one or more of the additional following criteria: • located within 200 feet of an environmentally sensitive area or the Pacific Ocean; and/or, • disturbed area is located on a slope with a grade at or exceeding 5 horizontal to 1 vertical; and/or • disturbed area is located along or within 30 feet of a storm drain inlet, an open drainage channel or watercourse; and/or • construction will be initiated during the rainy season or will extend into the rainy season (Oct. 1 through April 30).	Tier 2
Low Threat Assessment Criteria ❑ My project does not meet any of the Significant or Moderate Threat criteria, is not an exempt permit type (see City's list of Permit Types Exempt from Construction SWPPP requirements) and project meets one or more of the following criteria: • results in some soil disturbance; and/or • includes outdoor construction activities (such as roofing, saw cutting, equipment washing, material stockpiling, vehicle fueling, waste stockpiling)	Tier 1
No Threat Project Assessment Criteria ❑ My project is in a category of permit types exempt from City Construction SWPPP requirements (see City's list of Permit Types Exempt from Construction SWPPP requirements) and/or does not meet any of the High, Moderate or Low Threat criteria described above.	Exempt

* The City Engineer may authorize minor variances from the Storm Water Threat Assessment Criteria in special circumstances where it can be shown that a lesser or higher Construction SWPPP Tier Level is warranted in the opinion of the City Engineer

Appendix B

Storm Water Certification Forms

Storm Water Compliance Form For a Tier 3 Construction SWPPP

I am applying to the City of Carlsbad for the following type of construction permit(s):

Grading Permit Building Permit Right-of-Way Permit

My project requires preparation and approval of a Tier 3 Construction Storm Water Pollution Prevention Plan (SWPPP) because my project meets one or more of the following criteria demonstrating that the project potentially poses a significant threat to storm water quality:

- ❑ My project includes clearing, grading or other disturbances to the ground resulting in soil disturbance totaling one or more acres including any associated construction staging, equipment storage, stockpiling, pavement removal, refueling and maintenance areas; or,
- ❑ My project is part of a phased development plan that will cumulatively result in soil disturbance totaling one or more acres including any associated construction staging, equipment storage, stockpiling, pavement removal, refueling and maintenance areas; or,
- ❑ My project is located inside or within 200 feet of an environmentally sensitive area and has a significant potential for contributing pollutants to nearby receiving waters by way of storm water runoff or non-storm water discharge(s).

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE ABOVE CHECKED STATEMENTS ARE TRUE AND CORRECT.

I AM SUBMITTING FOR CITY APPROVAL A TIER 3 CONSTRUCTION SWPPP PREPARED IN ACCORDANCE WITH CITY STANDARDS AND THE REQUIREMENTS OF THE STATE WATER RESOURCES CONTROL BOARD GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES - WATER QUALITY ORDER NO 99-08-DWQ (GENERAL CONSTRUCTION PERMIT) AND ANY AMENDMENT, REVISION OR RE-ISSUANCE THEREOF.

I UNDERSTAND AND ACKNOWLEDGE THAT I MUST SUBMIT THE CITY APPROVED TIER 3 CONSTRUCTION SWPPP TO THE SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD TOGETHER WITH A NOTICE OF INTENTION (NOI), AN APPROPRIATE FILING FEE AND OTHER REQUIRED DOCUMENTATION AND RECEIVE A STATE WASTE DISCHARGER'S IDENTIFICATION (WDID) NUMBER PRIOR TO CITY ISSUANCE OF THE ABOVE REQUESTED CONSTRUCTION PERMIT(S).

I ALSO UNDERSTAND AND ACKNOWLEDGE THAT I MUST ADHERE TO, AND AT ALL TIMES, COMPLY WITH THE CITY APPROVED TIER 3 CONSTRUCTION SWPPP THROUGHTOUT THE DURATION OF THE CONSTRUCTION ACTIVITIES UNTIL THE CONSTRUCTION WORK IS COMPLETE AND APPROVED BY THE CITY OF CARLSBAD.

Owner/Owner's Authorized Agent Information and Signature Box

Address/Location:	Assessor Parcel Number(s):
Owner/Owner's Authorized Agent Name:	Title:
Owner/Owner's Authorized Agent Signature:	Date:

This Box for City Use Only

City Concurrence:	Yes	No
By:		
Date:		
Project ID:		

Storm Water Compliance Form For a Tier 2 Construction SWPPP

I am applying to the City of Carlsbad for one or more the following type of construction permit(s):

Grading Permit Building Permit Right-of-Way Permit

My project does not meet any of the following criteria for a project that poses a significant threat to storm water quality:

- ✓ My project does not include clearing, grading or other ground disturbances resulting in soil disturbance totaling one or more acres including any associated construction staging, equipment storage, stockpiling, pavement removal, refueling and maintenance areas; and,
- ✓ My project is not part of a phased development plan that will cumulatively result in soil disturbance totaling one or more acres including any associated construction staging, equipment storage, stockpiling, pavement removal, refueling and maintenance areas; and,
- ✓ My project is not located inside or within 200 feet of an environmentally sensitive area and will not have a significant potential for contributing pollutants to nearby receiving waters by way of storm water runoff or non-storm water discharge(s).

My project requires preparation and approval of a Tier 2 Construction Storm Water Pollution Prevention Plan (SWPPP) because my project meets one or more of the following criteria demonstrating that the project potentially poses a moderate threat to storm water quality:

- ❑ My project requires a grading plan pursuant to the Carlsbad Grading Ordinance (Chapter 15.16 of the Carlsbad Municipal Code); and/or,
- ❑ My Project will result in 2,500 square feet or more of soils disturbance including any associated construction staging, stockpiling, pavement removal, equipment storage, refueling and maintenance areas and, my project meets one or more of the following additional criteria:
  - Project is located within 200 feet of an environmentally sensitive area or the Pacific Ocean;
  - Project's disturbed area is located on a slope with a grade at or exceeding 5 horizontal to 1 vertical;
  - Project's disturbed area is located along or within 30 feet of a storm drain inlet, an open drainage channel or watercourse; and/or
  - Project will be initiated during the rainy season or will extend into the rainy season (Oct. 1 through April 30).

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE ABOVE CHECKED STATEMENTS ARE TRUE AND CORRECT. I AM SUBMITTING FOR CITY APPROVAL A TIER 2 CONSTRUCTION SWPPP PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF CITY STANDARDS.

I UNDERSTAND AND ACKNOWLEDGE THAT I MUST ADHERE TO, AND AT ALL TIMES, COMPLY WITH THE CITY APPROVED TIER 2 CONSTRUCTION SWPPP THROUGHTOUT THE DURATION OF THE CONSTRUCTION ACTIVITIES UNTIL THE CONSTRUCTION WORK IS COMPLETE AND APPROVED BY THE CITY OF CARLSBAD.

Owner/Owner's Authorized Agent Information and Signature Box

This Box for City Use Only

Address/Location:	Assessor Parcel Number(s):
Owner/Owner's Authorized Agent Name:	Title:
Owner/Owner's Authorized Agent Signature:	Date:

City Concurrence:	Yess	No
By:		
Date:		
Project ID:		

Storm Water Compliance Exemption Form

I am applying to the City of Carlsbad for the following type(s) of construction permit:

Building Permit Right-of-Way Permit

- ❑ My project is categorically exempt from the requirement to prepare a storm water pollution prevention plan (SWPPP) because it only requires issuance of one or more of the following permit types:

Electrical Permit Fire Additional Permit Fire Alarm Permit Fixed Systems Permit Haul Route Permit Mechanical Permit Mobile Home Permit Oversize Load Permit	Patio Deck Plumbing Permit Sign Permit Spa – Factory Made Sprinkler Permit Water Discharge Permit Water Meter Permit

- ❑ My project is exempt from the requirement to prepare a storm water pollution prevention plan (SWPPP) because it meets the "no threat" assessment criteria on the City's Project Threat Assessment Worksheet for Determination of Construction SWPPP Tier Level.

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE ABOVE CHECKED STATEMENTS ARE TRUE AND CORRECT.

I UNDERSTAND AND ACKNOWLEDGE THAT EVEN THOUGH THIS PROJECT DOES NOT REQUIRE PREPARATION OF A CONSTRUCTION SWPPP, I MUST STILL ADHERE TO, AND AT ALL TIMES DURING CONSTRUCTION ACTIVITES FOR THE PERMIT TYPE(S) CHECKED ABOVE, COMPLY WITH THE STORM WATER BEST MANAGEMENT PRACTICES PURSUANT TO TITLE 15 OF THE CARLSBAD MUNICIPAL CODE AND TO CITY STANDARDS.

Owner/Owner's Authorized Agent Information and Signature Box

This Box for City Use Only

Address/Location: Assessor Parcel Number(s):	
Owner/Owner's Authorized Agent Name:	Title:
Owner/Owner's Authorized Agent Signature:	Date:

City Concurrence:	Yess	No
By:		
Date:		
Project ID:		

Appendix C

Construction Threat Assessment Worksheet
for
Determination of Threat to Storm Water Quality

Construction Threat Assessment Worksheet for Determination of a Project's Perceived Threat to Storm Water Quality

Construction SWPPP Tier Level	Construction Threat Assessment Criteria*	Perceived Threat to Storm Water Quality
Tier 3	Tier 3 – High Construction Threat Assessment Criteria ❑ Project site is 50 acres or more and grading will occur during the rainy season ❑ Project site is 1 acre or more in size and is located within the Buena Vista or Agua Hedionda Lagoon watershed, inside or within 200 feet of an environmentally sensitive area (ESA) or discharges directly to an ESA ❑ Soil at site is moderately to highly erosive (defined as having a predominance of soils with USDA-NRCS Erosion factors k_f greater than or equal to 0.4) ❑ Site slope is 5 to 1 or steeper ❑ Construction is initiated during the rainy season or will extend into the rainy season (Oct. 1 through April 30). ❑ Owner/contractor received a Storm Water Notice of Violation within past two years	High
	Tier 3 – Medium Construction Threat Assessment Criteria All projects not meeting Tier 3 High Construction Threat Assessment Criteria	Medium
Tier 2	Tier 2 High Construction Threat Assessment Criteria ❑ Project is located within the Buena Vista or Agua Hedionda Lagoon watershed, inside or within 200 feet of an environmentally sensitive area (ESA) or discharges directly to an ESA ❑ Soil at site is moderately to highly erosive (defined as having a predominance of soils with USDA-NRCS Erosion factors k_f greater than or equal to 0.4) ❑ Site slope is 5 to 1 or steeper ❑ Construction is initiated during the rainy season or will extend into the rainy season (Oct. 1 through April 30). ❑ Owner/contractor received a Storm Water Notice of Violation within past two years ❑ Site results in one half acre or more of soil disturbance	High
	Tier 2 – Medium Construction Threat Assessment Criteria ❑ All projects not meeting Tier 2 High Construction Threat Assessment Criteria	Medium
Tier 1	Tier 1 - Medium Inspection Threat Assessment Criteria ❑ Project is located within the Buena Vista or Agua Hedionda Lagoon watershed, within or directly adjacent to an environmentally sensitive area (ESA) or discharges directly to an ESA ❑ Soil at site is moderately to highly erosive (defined as having a predominance of soils with USDA-NRCS Erosion factors k_f greater than or equal to 0.4) ❑ Site slope is 5 to 1 or steeper ❑ Construction is initiated during the rainy season or will extend into the rainy season (Oct. 1 through April 30). ❑ Owner/contractor received a Storm Water Notice of Violation within past two years ❑ Site results in one half acre or more of soil disturbance	Medium
	Tier 1 - Low Inspection Threat Assessment Criteria ❑ All projects not meeting Tier 1 Medium Construction Threat Assessment Criteria	Low
Exempt	- Not Applicable -	Exempt

* The City Engineer may authorize minor variances from the Construction Threat Assessment Criteria in special circumstances where it can be shown that a lesser or higher amount of storm water compliance inspection is warranted in the opinion of the City Engineer

Appendix D

Tier 3 Construction SWPPP Required Elements Checklist

TIER 3 CONSTRUCTION SWPPP REQUIRED ELEMENTS CHECKLIST

Project Name_____ Project ID _____ SWPPP Preparer _____ Date _____

Construction SWPPP Required Element	Reference Document and Section (1)	Page Number (2)	Not Applicable N/A	Implementation Date (3)
GCP Section A. Storm Water Pollution Prevention Plan (SWPPP)				
Vicinity Map (graphic)	***GCP A.5.a.1***			
Major roadways, geographic features or landmarks	*GCP* A.5.a.1			
Site perimeter	*GCP* A.5.a.1			
Geographic features	GCP A.5.a.1			
General topography	*GCP* A.5.a.1			
Site Map (graphic)(can modify Parcel Map)	***GCP A.5.a.2***			
Site perimeter	*GCP* A.5.a.2			
Existing and proposed buildings, lots, and roadways	*GCP* A.5.a.2			
Storm water collection and discharge points	*GCP* A.5.a.2			
General topography before and after construction	*GCP* A.5.a.2			
Anticipated discharge location(s)	*GCP* A.5.a.2			
Drainage patterns	*GCP* A.5.a.2			
Relevant drainage areas 2	*GCP* A.5.a.			
Temporary on-site drainage	*GCP* A.5.a.2			
Drainage (graphic)	*GCP A.5.b.1*			
Drainage patterns	*GCP* A.5.b.1			
Slopes after major grading	*GCP* A.5.b.1			
Calculations for storm water run-on	*GCP* A.5.b.1			
BMPs that divert off-site drainage from going through site	*GCP* A.5.b.1			
Storm Water Inlets (graphic)	***GCP A.5.b.2***			
Drainage patterns to storm water inlets or receiving water	*GCP* A.5.b.2			
BMPs that protect storm water inlets or receiving water	*GCP* A.5.b.2			
Site History/Past Site Usage (Real Estate Broker Disclosure may be sufficient)	***GCP A.5.b.3***			
Description of toxic materials treated, stored, or spilled on site	*GCP* A.5.b.3			
BMPs that minimize contact of contaminants with storm water	*GCP* A.5.b.3			
Location of Areas Designated for: (graphic)	***GCP A.5.b.4***			

(1) Reference Document Legend: GCP = General Construction Permit; MP = Municipal Permit; CSWSM = City Storm Water Standards Manual

(2) Indicate the page number where the information is located in your SWPPP. If the information is not applicable to your site, construction activities, or construction materials, check the N/A box. Your SWPPP does not have to address items which are not applicable to your situation.

(3) Date that the BMP will be installed on the site

Construction SWPPP Required Element	Reference Document and Section (1)	Page Number (2)	Not Applicable N/A	Implementation Date (3)
Soil or waste storage	*GCP* A.5.b.4			
Vehicle storage & service	*GCP* A.5.b.4			
Construction material loading, unloading, and access	*GCP* A.5.b.4			
Equipment storage, cleaning, maintenance	*GCP* A.5.b.4			
BMP Descriptions for: (graphic or narrative)	***GCP A.5.b.5***			
Waste handling and disposal areas	*GCP* A.5.b.5			
On-site storage and disposal of construction materials and waste	*GCP* A.5.b.5			
BMPs to minimize exposure of storm water to construction materials, equipment, vehicles, waste	*GCP* A.5.b.5			
Post Construction BMPs	***GCP A.5.b.6 See A. 10***			
Additional Information	***GCP A.5. c***			
Description of other pollutant sources and BMPs that cannot be shown graphically	*GCP* A.5.c.1			
Pre-construction control practices	*GCP* A.5.c.1			
Inventory of materials and activities that may pollute storm water	*GCP* A.5.c.2			
BMPs to reduce/eliminate potential pollutants listed in the inventory	*GCP* A.5.c.2			
Runoff coefficient (before & after)	*GCP* A.5.c.3			
Percent impervious (before & after)	*GCP* A.5.c.3			
Copy of the NOI and WDID #	*GCP* A.5.c.4			
Construction activity schedule	*GCP* A.5.c.5			
Contact information	*GCP* A.5.c.6			
EROSION CONTROL	***GCP* A.6**			
The SWPPP shall include: (graphic)	***GCP A.6.a-c***			
Areas of vegetation on site	*GCP* A.6.a.1			
Areas of soil disturbance that will be stabilized during rainy season	*GCP* A.6.a.2			
Areas of soil disturbance which will be exposed during any part of the rainy season	*GCP* A.6.a.3			
Construction phase / BMP sequencing schedule including supplemental pre-rain action plan for erosion control measures	*GCP* A.6.a.4			
BMPs for erosion control	*GCP* A.6.b			

(1) Reference Document Legend: GCP = General Construction Permit; MP = Municipal Permit; CSWSM = City Storm Water Standards Manual

(2) Indicate the page number where the information is located in your SWPPP. If the information is not applicable to your site, construction activities, or construction materials, check the N/A box. Your SWPPP does not have to address items which are not applicable to your situation.

(3) Date that the BMP will be installed on the site

Construction SWPPP Required Element	Reference Document and Section (1)	Page Number (2)	Not Applicable N/A	Implementation Date (3)
BMPs to control wind erosion	*GCP* A.6.c			
SEDIMENT CONTROL	*GCP* A.8			
Description/Illustration of BMPs to prevent increase of sediment load in discharge	*GCP* A.8			
Construction phase / BMP sequencing schedule including supplemental pre-rain action plan for sediment control measures	*GCP* A.8			
NON-STORM WATER	***GCP* A.9**			
Description of non-storm water discharges to receiving waters	*GCP* A.9			
Locations of discharges	*GCP* A.9			
Description of BMPs	*GCP* A.9			
Name and phone number of qualified person responsible for non-storm water management	*GCP* A.9			
POST-CONSTRUCTION	***GCP* A.10**			
Description and location of BMPs	*GCP* A.10			
Operation/Maintenance of BMPs after project completion (including funding)	*GCP* A.10			
MAINTENANCE, INSPECTIONS, AND REPAIR	*GCP* A.11			
Name and phone number of qualified person responsible for inspections	*GCP* A.11			
Inspection checklist: date, weather, inadequate BMPs, visual observations of BMPs, corrective action, inspector's name, title, signature	*GCP* A.11.a-f			
OTHER REQUIREMENTS	*GCP* A.12-16			
Documentation of all training	*GCP* A.12			
List of Contractors/Subcontractors	*GCP* A.13			
GCP Section B. Monitoring and Reporting Requirements				
Description of site inspection plans	*GCP* B.3			
Compliance certification (annually 7/1) if project is under active construction	*GCP* B.4			
Noncompliance reporting	*GCP* B.5			
Records of all inspections; compliance certifications; noncompliance reports, etc.	*GCP* B.6			

(1) Reference Document Legend: GCP = General Construction Permit; MP = Municipal Permit; CSWSM = City Storm Water Standards Manual

(2) Indicate the page number where the information is located in your SWPPP. If the information is not applicable to your site, construction activities, or construction materials, check the N/A box. Your SWPPP does not have to address items which are not applicable to your situation.

(3) Date that the BMP will be installed on the site

Construction SWPPP Required Element	Reference Document and Section (1)	Page Number (2)	Not Applicable N/A	Implementation Date (3)
Monitoring program for sediment contribution from direct discharges to impaired water bodies	*GCP* B.7			
Monitoring program for pollutants not visually detectable in storm water (nonvisible pollutants)	*GCP* B.8			
GCP Section C. Standard Provisions for Construction Activities				
Signed Certification for SWPPP, reports, amendments, etc. Who is authorized to sign and by what authority has the duly authorized representative been assigned?	*GCP* C.9,10			
Location of General Permit and SWPPP on site during construction activities	*GCP* C. 17			
MP Section D.2 Construction Component				
GENERAL SITE MANAGEMENT	**MP D.2.c.(1)(a)**			
Pollution prevention, where appropriate	MP D.2.c.(1)(a)i. and CSWSM 3.3.2			
Development and implementation of a storm water site management plan	MP D.2.c.(1)(a)ii. and CSWSM 3.3.6			
Minimization of areas that are cleared and graded to only the portion of the site that is necessary for construction	MP D.2.c.(1)(a)iii. and CSWSM 3.3.6.1			
Minimization of exposure time of disturbed soil areas	MP D.2.c (1)(a)iv. and CSWSM 3.3.6.1			
Minimization of grading during the wet season and correlation of grading with seasonal dry weather periods to the extent feasible	MP D.2.c.(1)(a)v. and CSWSM 3.3.6.1			
Limitation of grading to a maximum disturbed area of 50 acres	MP D.2.c.(1)(a)vi. and CSWSM 3.3.8			
Temporary stabilization and reseeding of disturbed soil areas as rapidly as feasible	MP D.2.c.(1)(a)vii. and CSWSM 3.3.6.1			
Preservation of natural hydrologic features where feasible;	MP D.2.c. (1)(a)viii. and CSWSM 3.3.6			
Preservation of riparian buffers and corridors where feasible	MP D.2.c.(1)(a)ix. and CSWSM 3.3.6			
Maintenance of all BMPs, until removed	MP D.2.c.(1)(a)x. and CSWSM 3.3.6			
Retention, reduction, and proper management of all pollutant discharges on site to	MP D.2.c.(1)(a)xi. and			

(1) Reference Document Legend: GCP = General Construction Permit; MP = Municipal Permit; CSWSM = City Storm Water Standards Manual

(2) Indicate the page number where the information is located in your SWPPP. If the information is not applicable to your site, construction activities, or construction materials, check the N/A box. Your SWPPP does not have to address items which are not applicable to your situation.

(3) Date that the BMP will be installed on the site

Construction SWPPP Required Element	Reference Document and Section (1)	Page Number (2)	Not Applicable N/A	Implementation Date (3)
the MEP standard	CSWSM 3.3.6			
EROSION AND SEDIMENT CONTROLS	**MP D.2.c.(1)(b)** and CSWSM 3.3.3			
Erosion prevention, to be used as the most important measure for keeping sediment on site during construction, but never as the single method	MP D.2.c.(1)(b)i. and CSWSM 3.3.3			
Sediment controls, to be used as a supplement to erosion prevention for keeping sediment on-site during construction	MP D.2.c.(1)(b)ii. and CSWSM 3.3.3			
Slope stabilization on all inactive slopes during the rainy season and during rain events in the dry season	MP D.2.c (1)(b)iii. and CSWSM 3.3.6.1&2			
Slope stabilization on all active slopes during rain events regardless of the season	MP D.2.c (1)(b)iv. and CSWSM 3.3.6.1			
Permanent re-vegetation or landscaping as early as feasible.	MP D.2.c.(1)(b)v. and CSWSM 3.3.6			
ADVANCED TREATMENT CONTROLS Addition of advanced treatment controls for projects that are determined to be an exceptional threat to water quality	**MP D.2.c.(2) and CSWSM 3.3.9**			
Operations and Maintenance Schedule	CSWSM 3.3.9			
Advanced treatment Monitoring Plan	CSWSM 3.3.9			
Advanced Treatment Training Plan	CSWSM 3.3.9			
Alternative Source Control Procedures in Lieu of Advanced Treatment Control Noted on Plans	CSWSM 3.3.9			
YEAR ROUND BMP IMPLEMENTATION	**MP D.2.c.(3) and CSWSM 3.3.6**			
Plan for year round implementation of minimum BMPs that can vary based upon wet and dry seasons	MP D.2.c.(3) and CSWSM 3.3.6			
ADDITIONAL CONTROLS FOR SITES TRIBUTARY TO CWA SECTION 303(d) IMPAIRED WATERS	**MP D.2.c.(4) and CSWSM 3.3.7**			
Maintain vegetative cover as much as possible by developing the project in a phased approach to reduce the amount of exposed soil at any one time.	CSWSM 3.3.7			
Limit the areas of active construction to five acres at any one time.	CSWSM 3.3.7			

(1) Reference Document Legend: GCP = General Construction Permit; MP = Municipal Permit; CSWSM = City Storm Water Standards Manual

(2) Indicate the page number where the information is located in your SWPPP. If the information is not applicable to your site, construction activities, or construction materials, check the N/A box. Your SWPPP does not have to address items which are not applicable to your situation.

(3) Date that the BMP will be installed on the site

Construction SWPPP Required Element	Reference Document and Section (1)	Page Number (2)	Not Applicable N/A	Implementation Date (3)
Provide 100 percent soil cover for all areas of inactive construction throughout the entire time of construction, on a year-round basis.	CSWSM 3.3.7			
Provide appropriate perimeter control at all appropriate locations along the site perimeter and at all inlets to the storm drain system at all times during the rainy season	CSWSM 3.3.7			
Provide vegetated buffer strips between the active construction area and any water bodies.	CSWSM 3.3.7			
Provide stabilized construction entrances and limit all vehicle and foot traffic to those entrances.	CSWSM 3.3.7			
INSPECTION OF CONSTRUCTION SITE	**MP D.2.d and CSWSM 3.4.3**			
Inspection priority determined for site and frequency noted in SWPPP	MP D.2.d and CSWSM 3.4.3			
STANDARD STORM WATER POLLUTION PREVENTION NOTES	**CSWSM 3.3.10**			
Standard Storm Water Pollution Prevention Notes included on Grading Plans	CSWSM 3.3.10			

(1) Reference Document Legend: GCP = General Construction Permit; MP = Municipal Permit; CSWSM = City Storm Water Standards Manual

(2) Indicate the page number where the information is located in your SWPPP. If the information is not applicable to your site, construction activities, or construction materials, check the N/A box. Your SWPPP does not have to address items which are not applicable to your situation.

(3) Date that the BMP will be installed on the site

Appendix E

TIER 3 Construction SWPPP Checklist
(CASQA Format)

TIER 3 CONSTRUCTION SWPPP CASQA FORMAT CHECKLIST

Project Name_____ Planchecker _____
Project ID _____ Date _____

CASQA Section Number and Potential Required Elements	Required for Project	Planchecker Verification
General Formatting		
Tabbed separators included between Sections		
Section - 100 SWPPP Certifications and Approval		
100.1 - SWPPP Certification by Preparer		
Project name, grading permit, building permit, discretionary permit number(s), APN at top of form		
Certification signed and dated by person responsible for preparation of the SWPPP		
Name, title and telephone number of the person signing the form		
SWPPP and Monitoring Program Checklist in Attachment L completed		
Notice of Intent (NOI) attached, completed and signed by Owner or Owner's agent		
100.2 - Owner Approval and Certification of SWPPP		
Project name, grading permit, building permit, discretionary permit number(s), APN at top of form		
Certification signed and dated by owners staff; specifically, the person responsible for preparation of the SWPPP and/or the person responsible for overall management of the site		
Name, title and telephone number of the person signing the form		
100.3 - Annual Compliance Certification		
Blank copy of the Annual Compliance of Compliance included as Attachment M		
Section 200 – SWPPP Amendments		
200.1 - SWPPP Amendment Certification and Approval		
Instructions and Blank Amendment Certification and Approval forms included		
200.2 - Amendment Log		
Instructions and Blank Amendment Log included		
Section 300 - Introduction and Project Description		
300.1 – Introduction and Project Description		
Projects legal description including County, City and address, proximity to receiving waters to which project will discharge including surface waters, drainage channels, and drainage systems; ownership of all drainage systems to which the project discharges		
300.2 – Unique Site Features		
Description of unique site features (water bodies, wetlands, environmentally sensitive areas, endangered or protected species, etc) and significant or high risk construction activities that may impact storm water quality. Include any		

unique features or activities within or adjacent to water bodies		
300.3 - Construction Site Estimates		
Construction site area in acres		
Runoff coefficient and percentage impervious area before and after construction		
Calculations for Coefficient change included in Attachment D		
Anticipated storm water run-on to the construction site		
Calculations for storm water run-on included in Attachment E		
300.4 - Project Schedule/Water Pollution Control Schedule		
Written and geographical project schedule including:		
Project start and finish dates		
Rainy season dates		
Annual certifications		
Mobilization dates		
Mass clearing and grubbing/roadside clearing dates		
Major grading/excavation dates		
Special dates named in other permits such as Fish and Game and Army Corps of Engineers Permits		
Dates for submittal of SWPPP Amendments required by the contract documents		
Annual submittal of rainy season implementation schedule if required by the Owner or Permittee		
Dates for implementation of pre-rainy season temporary soil stabilization and temporary sediment control BMPs, if required		
Rainy season implementation schedule including:		
Deployment of temporary soil stabilization BMPs		
Deployment of temporary sediment control BMPs		
Deployment of wind erosion control Bmps		
Deployment of tracking control BMPs		
Deployment of non-storm water BMPs		
Deployment of waste management and materials pollution control BMPs		
Non-rainy season implementation schedule		
Deployment of temporary soil stabilization BMPs		
Deployment of temporary sediment control BMPs		
Deployment of wind erosion control Bmps		
Deployment of tracking control BMPs		
Deployment of non-storm water BMPs		
Deployment of waste management and materials pollution control BMPs		
Paving, saw-cutting and any other pavement related operations		
Major planned stockpiling operations		

Dates for other significant long-term operations or activities that may plan non-storm water discharges such as dewatering, grinding, etc		
Final stabilization activities staged over time for each area of the project		
300.5 - Contact Information/List of Responsible Parties		
Name and telephone number(s) of the Contractor's Storm Water Pollution Prevention Manager (SWPPM) and required text		
Section 400 - References		
List of documents referenced in the SWPPP		
All Federal, State and City permits		
On-site project information including plans and specifications, geotechnical report(s), hydrology/hydraulic report(s), and other reports and regulatory guidance documents		
Each referenced document includes title, number (if applicable), author, date published and revision date		
Section 500 – Body of SWPPP		
500.1 - Objectives		
Required text included		
500.2 – Vicinity Map		
8 ½' x 11" color copy of USGS map or equal included as Attachment A displaying site perimeter, major roadways, geographic features and landmarks, adjacent water bodies, known wells, an outline of the off-site drainage area, anticipated discharge locations and general topography		
Brief narrative description of the vicinity map		
500.3 – Pollutant Source Identification and BMP Selection		
Required text included for each subsection		
500.3.1 – Inventory of Materials and Activities that May Pollute Storm Water		
List of all construction materials that have the potential to contribute to the discharge of pollutants to storm water and required text		
List of all construction activities that have the potential to contribute sediment to storm water discharges		
500.3.2 – Existing Pre-construction Control Measures		
List of any existing BMPs in place prior to construction used to reduce erosion, sediment or other pollutants in storm water discharges		
500.3.3 Nature of Fill Material and Existing Data Describing the Soil		
Description of the conditions of the fill materials and soils at the construction site including soil types, groundwater location and condition, dewatering operations, presence of existing toxic materials and contaminants and other relevant information		
500.3.4 Erosion Control (EC) (Soil Stabilization)		
Attachment C included. BMP Consideration Checklist filled out. Appropriate EC BMPs selected		
Introductory paragraphs the define EC and give general approach on how temporary EC BMPs will be implemented		

List all temporary EC BMPs to be used on the project		
Show temporary EC BMPs on the Water Pollution Control Drawings (WPCDs)		
Provide narrative description of temporary EC BMPs that cannot be adequately identified on the WPCDs		
Discussion of on-site availability of temporary EC materials and proposed mobilization and implementation of temporary EC BMPs in event of predicted rain. Explanation of how and when BMPs will be implemented when rain is forecasted		
Additional City Required Erosion Control Requirements		
Erosion prevention, to be used as the most important measure for keeping sediment on site during construction, but never as the single method		
Sediment controls, to be used as a supplement to erosion prevention for keeping sediment on-site during construction		
Slope stabilization on all inactive slopes during the rainy season and during rain events in the dry season		
Slope stabilization on all active slopes during rain events regardless of the season		
Permanent revegetation or landscaping as early as feasible.		
500.3.5 – Sediment Control (SC)		
Attachment C included. BMP Consideration Checklist filled out. Appropriate SC BMPs selected		
List all temporary SC BMPs to be used on the project		
Show temporary SC BMPs on the Water Pollution Control Drawings (WPCDs)		
Provide narrative description of temporary SC BMPs that cannot be adequately identified on the WPCDs		
BMPs used to divert off-site drainage around and/or through the construction site shown on WPCDs		
Discussion of on-site availability of temporary EC materials and proposed mobilization and implementation of temporary EC BMPs in event of predicted rain		
500.3.6 Tracking Control (TC)		
Attachment C included. BMP Consideration Checklist filled out. Appropriate TC BMPs selected		
List all temporary TC BMPs to be used on the project		
Show all ingress/egress points to project site on WPCDs and show or describe TC BMPs		
Provide narrative description of temporary TC BMPs that cannot be adequately identified on the WPCDs		
Discussion of road cleaning BMPs		
500.3.7 Wind Erosion Control (WEC)		
Attachment C included. BMP Consideration Checklist filled out. Appropriate WEC BMPs selected		
Narrative description of WEC BMPs to be used on project		
500.3.8 – Non-Storm Water Control (NSWC)		
All potential non-storm water discharges listed		
Attachment C included. BMP Consideration Checklist filled out. Appropriate NSWC BMPs selected		
Discuss how mobile operations, such as equipment maintenance and fueling, will be addressed		
Describe each planned NSW discharge from project including flow/quantity. If flow/quantity cannot be determined,		

then describe nature and extent of activity so quantity can be inferred		
Show NSWC BMPs on WPCDs and/or provide narrative description including path of discharge to storm inlet, drainage facilities or receiving waters		
Describe time period and frequency of each NSW activity that generates or may generate a discharge		
Describe mandatory NSWC BMPs and practices required by City , State or Federal agencies and provide details and schedules as appropriate. Include maintenance, inspection, testing and reporting procedures, if applicable. Include permit info for discharges covered by separate NPDES permit		
Describe selected NSWC BMPs and practices to minimize, contain and dispose of prohibited discharges. Include maintenance, inspection, testing and reporting procedures, if applicable		
Describe sediment controls for landscape irrigation run-off prior to establishment of vegetation		
Indicate how illicit connections and illegal discharges will be handled.		
Develop new owner notification pamphlet to make new owner aware of potential for unauthorized discharges and practices, if needed		
500.3.9 – Waste Management and Material Pollution Control (WMMPC)		
All potential WMMP activities listed		
Attachment C included. BMP Consideration Checklist filled out. Appropriate WMMPC BMPs selected		
Substitute safer, less polluting products where possible		
List selected WMMPC BMPs and describe proposed facilities for materials storage and waste management. Include schedules, inspection and maintenance requirements. Show on WPCDs as appropriate		
Describe proposed waste collection and removal schedule		
500.3.10 – Cost Breakdown for Water Pollution Control		
Water pollution control cost estimate sheet included		
Additional City Requirements		
Advanced Treatment Controls (If required. See Storm Water Standards Manual Section 3.3.9)		
Operations and Maintenance Schedule		
Advanced treatment Monitoring Plan		
Advanced Treatment Training Plan		
Alternative Source Control Procedures in Lieu of Advanced Treatment Control Noted on Plans		
Year Round BMP Implementation		
Plan for year round implementation of minimum BMPs that can vary based upon wet and dry seasons		
Additional Controls for Sites tributary to CWA Section 303(d) Impaired Waters RS		
Maintain vegetative cover as much as possible by developing the project in a phased approach to reduce the amount of exposed soil at any one time.		
Limit the areas of active construction to five acres at any one time.		
Provide 100 percent soil cover for all areas of inactive construction throughout the entire time of construction, on a year-round basis.		

Provide appropriate perimeter control at all appropriate locations along the site perimeter and at all inlets to the storm drain system at all times during the rainy season		
Provide vegetated buffer strips between the active construction area and any water bodies.		
Provide stabilized construction entrances and limit all vehicle and foot traffic to those entrances.		
Inspection of Construction Site		
Inspection priority determined for site and frequency noted in SWPPP		
City Standard Storm Water Pollution Prevention Notes		
Standard Storm Water Pollution Prevention Notes included on Grading Plans		
500.4 – Water Pollution Control Drawings (WPCDs)		
WPCDs included as Attachment B		
Cover sheet listing BMPs that will be used and any selected options shown on fact sheets, along with construction notes and a legend		
All BMPs that can be shown are shown where appropriate on WPCDs		
BMP details included with WPCDs and appropriate CASQA and other standard references included		
Additional details shown as necessary to describe site specific BMP applications		
Grading sheets, drainage sheets or erosion control sheets used as base sheets for WPCDs.		
Base sheet details required:		
site perimeter		
Existing and proposed buildings, lots and roadways		
Permanent post construction BMPs		
Storm water collection and discharge points		
General topography before and after construction; anticipated discharge location(s)		
Tributary areas and drainage patterns to each on-site storm water inlet		
Receiving water or discharge point; off-site tributary drainage areas; temporary on-site drainage(s) to carry concentrated flows		
Outline of areas of existing vegetation; soil cover or native vegetation that will remain undisturbed		
Areas of cut and fill		
Outlines of areas of soil disturbance		
Locations of known toxic spills and discharges or contaminated soils		
Locations of potential non-storm water discharges such as dewatering operations, concrete saw cutting or coring, pressure washing, waterline flushing, diversions, cofferdams and vehicle equipment cleaning		
Locations of direct discharge into a Section 303(d) listed water body		
Sampling locations		
Ingress and egress points		
Temporary stockpiles		

Vehicle and equipment storage, fueling, maintenance and cleaning; and, phasing and/or construction staging		
BMPs for waste management and materials pollution control		
Show all storage, staging, borrow sites, stockpile sites, access roads, lay down areas and other non-development construction areas where construction activity will occur including contractors yard if in vicinity		
All contractor phasing and/or construction staging reflected on WPCDs for full scope of project		
500.5 – Construction BMP Maintenance, Inspection and Repair		
Description of program to maintain all construction BMPs		
Complete maintenance, inspection and repair program included as Attachment G		
500.6 – Post-Construction Storm Water Management		
500.6.1 Post-Construction Control Practices		
Describe the construction BMPs employed after all construction phases have been completed including their operation and maintenance after project completion		
For projects that require a Storm Water Management Plan (SWMP), the City SWMP identification number shall be referenced		
500.6.2 – Operation/Maintenance after Project Completion		
Description of any operations and maintenance requirements of post-construction control practices		
List parties responsible for long term operation and maintenance of permanent BMPs		
500.7 - Training		
Description of storm water pollution prevention training that contractor's inspection, maintenance and repair personnel have received		
Storm Water Pollution Prevention Manger (SWPPM) has a minimum of 24 hours training		
Document formal and informal storm water training on Trained Contractor Personnel Log Sheet included as Attachment I		
List of classes and copies of class completion documents may be submitted		
500.8 – List of Subcontractors		
List of subcontractors and individuals responsible for implementation of the SWPPP including telephone numbers and addresses included as Attachment J		
Section 600 – Monitoring Program and Reports		
600.1 – Site Inspections		
Required text included		
600.2 – Non-Compliance Reporting		
Required text included		
Sample Notice of Compliance form included as Attachment K		
Sample logging discharges form included as Attachment T		
600.3 – Record Keeping and Reports		
Required text included		

600.4 – Sampling and Analysis Plan for Sediment (for projects discharging to 303(d) waters)		
Required text included		
Describe if project discharges to 303(d) waters		
600.4.1 – Scope of Monitoring Activities		
List the impaired 303(d) water body and reason for impairment		
Describe the location(s) of direct discharge to each 303(d) listed water body		
Required text included		
600.4.2 – Monitoring Strategy		
Required text included		
Description of sampling schedule for monitoring impacts of direct discharges		
Description of sampling locations		
Description of rationale for selection of sampling location		
Identification of upstream location for sampling including GPS coordinates		
Identification of downstream location for sampling including GPS coordinates		
Include sampling location for run-on location if one exists		
Describe surrounding areas that may contribute to run-on sediment to site		
Sampling locations not located near point sources or confluences		
Sampling locations not located directly downstream from bridge or road surface run-off		
600.4.3 – Monitoring Preparation		
Identify sampling personnel including company name		
Describe training and qualifications of sampling personnel		
Identify contractors health and safety procedures for sampling personnel		
Identify alternate sampling personnel		
Identify state certified laboratory to analyze samples		
Describe strategy for ensuring adequate sample supplies are available prior to sampling		
Describe strategy for ensuring appropriate field testing equipment is available prior to sampling		
600.4.4 – Sample Collection and Handling		
Description of sample collection procedures		
Sample procedure in accordance with test procedure under 40 CFR Part 136		
Description of sample handling procedures		
Description of decontamination waste disposal requirements		
Description of sample collection documentation procedures		
Description of procedures for recording and correcting sampling data		
Chain of custody form required to be submitted to laboratory with samples		
Sampling activity log to be kept to document details of all sampling events		
Each sample bottle required to have proper and complete identification label		

600.4.5 – Sample Analysis		
Describe tests to be used on project samples using "Sample Collection, Preservation and Analysis for Monitoring Sedimentation/Siltation and/or Turbidity" form		
Appropriate answers included on form for discharges to 303(d) listed waters		
All appropriate blank fields on form filled in		
600.4.6 – Quality Assurance/Quality Control		
Required text included		
600.4.7 – Data Management and Reporting		
Required text included		
600.4.8 – Data Evaluation		
Required text included		
600.4.9 – Change of Conditions		
Required text included		
600.5 – Sampling and Analysis Plan for Non-Visible Pollutants		
Required text included		
600.5.1 – Scope of Monitoring Activities		
Required text included		
Identify general sources and locations of potential non-visible pollutants on project site for:		
Materials or wastes identified in Section 500.3.1		
Materials or wastes that are stored under watertight conditions		
Construction activities such as application of fertilizers, pesticides, herbicides etc that have occurred during a rain event of with 24 hours preceding a rain event		
Existing site features contaminated with non-visible pollutants		
Application of soil amendments and other chemicals with the potential to alter PH levels or contribute toxic pollutants to storm water runoff		
Storm water runoff from an area contaminated by historical usage of the site		
Storm water run-on to the project site with potential to contribute pollutants		
Breaches, malfunctions, leakages or spills from a BMP		
600.5.2 - Monitoring Strategy		
Required text included		
Description of sampling schedule		
Describe locations for sampling locations		
Description for rationale for selection sampling locations		
Sampling locations selected from each source of non-visible pollutants identified in Section 600.5.1		
Description of location for collecting uncontaminated background sample		
Description of location for sampling storm water run-on form each location identified in Section 600.5.1		

Description of sampling locationat off-site activities related to the project		
Sampling locations in areas that are safe, out of the path of heavy traffic and have attainable access		
List and describe surrounding sites and uses that may contribute run-on or airborne constituents to the site		
600.5.3 – Monitoring Preparation		
Identify party responsible for sample collection		
Describe training and qualifications of sampling personnel		
Identify contractors health and safety procedures for sampling personnel		
Identify alternate sampling personnel		
Identify state certified laboratory to analyze samples		
Describe strategy for ensuring adequate sample supplies are available prior to sampling		
Describe strategy for ensuring appropriate field testing equipment is available prior to sampling		
600.5.4 – Analytical Constituents		
Table 600-2 to be completed and attached		
List of non-visible pollutant source, non-visible pollutant name and water quality indicator		
Construction Material and Pollutant Testing Guidance Table – Non-Visible Pollutants table completed and attached		
Visible pollutants not added to table		
Table 600-3 completed and attached		
600.5.5 – Sample Collection and Handling		
Laboratory analysis, sampling, sample preservation and analyses conducted according to test procedures under 40 CFR Part 136		
Chain of custody form required to be submitted to laboratory with samples		
Sampling activity log to be kept to document details of all sampling events		
Each sample bottle required to have proper and complete identification label		
Description of sample collection procedures		
Description of sample handling procedures		
Description of decontamination waste disposal requirements		
Description of sample collection documentation procedures		
Description of procedures for recording and correcting sampling data		
Table 600-3 to be completed		
600.5.6 – Sample analysis		
Table 600-2 to be completed and attached		
Table 600-3 to be completed and attached		
Test method included for each non-visible pollutant identified in Table 600-2		
Procedure to contact laboratory for appropriate test method(s)/specification to be used for each constituent		
Field test instruments to be used for sampling identified		
600.5.7 – Quality Assurance/Quality Control		

Required text included		
6**00.5.8 – Data Management and Reporting**		
Required text included		
600.5.9 Data Evaluation		
Required text included		
600.5.10 – Change of Conditions		
Required text included		

Appendix F

Tier 2 Construction SWPPP Template

Tier 2 Construction SWPPP Site Assessment Form

Project ID: _____

Project Information:

Project Name: _____

Project Address/Location; _____

_____

Responsible Parties/Contact Information:

Name of Preparer: _____

Qualification of Preparer (Registration/Certification): _____

_____

Address: _____

City/State/Zip Code: _____

Phone Number: _____

Name of Owner/Owner's Agent: _____

Address: _____

City/State/Zip Code: _____

Phone Number: _____

Name of Emergency Contact: _____
(during construction)

Address: _____

City/State/Zip Code: _____

Phone Number: _____

Site and Construction Activity Description:

Construction Start Date: _____ End Date: _____

If work begins in rainy season or extends into rainy season, explain how project work can be scheduled can be altered to avoid rainy season impacts or to lessen exposure of site during rainy season: _____

_____

_____

_____

Grading Quantities: Cut: _____CY; Fill: _____CY; Import: _____CY;

Export: _____CY

Any Stockpile Proposed? _____ If yes, then estimate quantity: _____CY

Estimated duration of stockpile: _____Months

Soils types: _____

Does site contain a preponderance of soils with USDA-NRCS erosion factor kf greater than or equal to 0.4? _____

Is a staging area proposed (yes/no)? _____

If yes, then where is it located? _____

_____

Is concrete washout required (yes/no)? _____

Where is it located? _____

Any existing site contamination (yes/no)? _____

Where is it located? _____

Any vehicle storage, maintenance or fueling area proposed (yes/no)? _____

Where is it located? _____

Any de-watering operation proposed (yes/no)? _____

Where is it located? _____

Any other special operations proposed that may impair water quality (yes/no)? _____

What and where? _____

Watershed Basin project drains to: ☐ Buena Vista Lagoon ☐ Agua Hedionda Lagoon
☐ Encinas Creek ☐ Batiquitos Lagoon ☐ Pacific Ocean

Is project drainage tributary to a CWA section 303(d) listed water body impaired for sediment (includes Buena Vista and Agua Hedionda Lagoons) (yes/no): _____

If yes, describe additional controls that will be used on project site to mitigate for sediment impairments (if any): _____

_____

_____

_____

Is project inside or within 200 feet of an Environmentally Sensitive Area (yes/no): _____

If yes, describe additional controls that will be used on project site to mitigate for potential storm water impacts (if any): _____

_____

_____

Are any agency permits required (yes/no)? _____

Check off permit types required: ☐ Army Corps 404 permit

☐ Regional Board Water Quality 401 Certification ☐ Coastal Commission Certification

☐ U.S. Fish and Wildlife Section 7 ☐ Fish and Game Stream Alteration Agreement

☐ Other list: _____

List materials that will be used on construction site and their handling and storage requirements

Material	Characteristics/Toxicity	Handling requirements

If any toxic or hazardous materials are proposed, then a spill prevention plan is required. Is a spill prevention plan required (yes/no)? _____.

If yes, attach spill prevention plan.

Perceived Threat to Storm Water Quality rating:

Using the Construction Threat Assessment Worksheet (attached as Appendix C to Section 3 (Construction SWPPP Standards and Requirements) of the City Storm Water Standards Manual, determine the projects Perceived Threat to Storm Water Quality rating.

The Construction Threat to Storm Water Quality rating for this project is: ☐ High ☐ Medium

Signature of Plan Preparer:

Signature: _____ Date: _____

Print Name: _____ Title: _____

Attachments:

- ❑ Storm Water Compliance Form – Tier 2
- ❑ Spill Prevention Plan
- ❑ Hydrology and/or hydraulic study
- ❑ Solis and/or geotechnical report(s)
- ❑ Other. List: _____

_____

BMP Selection:

The following tables are provided to help identify and select appropriate site specific BMPs for the proposed project. Review the list of potential site construction activities and site conditions described along the left hand column of each sheet. Then, for each activity or site condition that is included in the proposed project, pick one or more of the BMPs described at the top of the form and place an X(s) in the box(es) that form(s) an intersection between the activity/site condition row and BMP column(s).

All structural (physical facility) BMP's should be shown on the site plan in the Construction SWPPP drawing set. Any proposed no-structural BMP should be noted in the Special Notes on the Construction SWPPP drawing set.

	Erosion Control BMPs													Wind Erosion BMPs
BMP Description →	Scheduling	Preservation of Existing Vegetation	Hydraulic Mulch	Hydroseeding	Soil Binders	Straw Mulch	Geotextiles & Mats	Wood Mulching	Earth Dikes and Drainage Swales	Velocity Dissipation	Slope Drains	Streambank Stabilization	Polyacrylamide	Wind Erosion Control
CASQA Designation →	EC-1	EC-2	EC-3	EC-4	EC-5	EC-6	EC-7	EC-8	EC-9	EC-10	EC-11	EC-12	EC-13	WE-1
Construction Activity or Site Condition														
Cleared Areas														
Flat pad graded areas														
Graded slope areas														
Trenching/Excavation														
Stockpiling														
Drilling/Boring														
Conduit/Pipe Installation														
Substructure/Pad Installation														
Staging Area														
Existing onsite vegetated areas														
Drainage flow onto site														
Drainage flows off of site														
Drainage at top of slope														
Other (list):														

	Sediment Control BMPs										
BMP Description →	Silt Fence	Sediment Basin	Sediment Trap	Check Dam	Fiber Rolls	Gravel Bag Berm	Street Sweeping and Vacuuming	Sandbag Barrier	Straw Bale Barrier	Storm Drain Inlet Protection	Chemical Treatment
CASQA Designation →	SE-1	SE-2	SE-3	SE-4	SE-5	SE-6	SE-7	SE-8	SE-9	SE-10	SE-11
Construction Activity Or Site Condition											
Cleared Areas											
Flat pad graded areas											
Graded slope areas											
Trenching/Excavation											
Stockpiling											
Drilling/Boring											
Conduit/Pipe Installation											
Substructure/Pad Installation											
Paving											
Staging Area											
Existing onsite vegetated areas											
Drainage flow onto site											
Drainage flows off of site											
Drainage at top of slope											
Other (list):											

	Tracking Control BMPs		
BMP Description →	Stabilized Construction Ingress/Egress	Stabilized Construcion Roadway	Ingress/Egress Tire Wash
CASQA Designation → **Construction Activity v**	TR-1	TR-2	TR-3
Site Access point(s)			
Staging area access point(s)			
Maintenance access roads to BMPs			
Other (list):			

	Non-Storm Water Management BMPs															
BMP Description →	Water Conservation Practices	Dewatering Operations	Paving and Grinding Operations	Temporary Stream Crossing	Clear Water Diversion	Illicit Connection/Discharge	Potable Water/Irrigation	Vehicle and Equipment Cleaning	Vehicle and Equipment Fueling	Vehicle and Equipment Maintenance	Pile Driving Operations	Concrete Curing	Concrete Finishing	Material and Equipment Use	Demolition Adjacent to Water	Temporary Batch Plants
CASQA Designation →	NS-1	NS-2	NS-3	NS-4	NS-5	NS-6	NS-7	NS-8	NS-9	NS-10	NS-11	NS-12	NS-13	NS-14	NS-15	NS-16
Construction Activity & Site Conditions																
Landscaping & Irrigation																
Drilling/Boring																
Concrete/Asphalt Sawcutting																
Concrete flatwork																
Paving																
Wire, Cable & Connector Installation																
Site Housekeeping																
Staging Area																
Equipment Maintenance and Fueling																
Hazardous Substance Management																
Dewatering																
Steam crossing																
Material delivery																
Solid waste handling including trash and debris removal																
Concrete or stucco work																
Other (list):																

	Waste Management and Materials Pollution Control BMPs									
BMP Description →	Material Delivery and Storage	Material Use	Stockpile Management	Spill Prevention and Control	Solid Waste Management	Hazardous Waste Management	Contaminated Soil Management	Concrete Waste Management	Sanitary/ Septic Waste Management	Liquid Waste Management
CASQA Designation → **Construction Activity And Site Conditions**	WM-1	WM-2	WM-3	WM-4	WM-5	WM-6	WM-7	WM-8	WM-9	WM-10
Landscaping & Irrigation										
Drilling/Boring										
Concrete/Asphalt Sawcutting										
Concrete flatwork										
Paving										
Wire, Cable & Connector Installation										
Site Housekeeping										
Staging Area										
Equipment Maintenance and Fueling										
Hazardous Substance Management										
Dewatering										
Steam crossing										
Material delivery										
Solid waste handling including trash and debris removal										
Concrete or stucco work										
Temporary porta-potties										
Other (list):										

Tier 2 Construction SWPPP Preparation Template

This document has been prepared to identify the various components that make up a Tier 2 Construction Storm Water Pollution Prevention Plan (SWPPP). A complete Tier 2 Construction SWPPP is composed of the following components:

1. A set of storm water pollution plan drawings meeting all the requirements of the Construction SWPPP Checklist items as contained in the Tier 2 Construction SWPPP Review Checklist attached as Appendix G to Section 3 (Construction SWPPP Standards and Requirements) in the City Storm Water Standards Manual.

2. A completed and signed Storm Water Compliance Form for a Tier 2 Construction SWPPP as contained in Appendix B to Section 3 (Construction SWPPP Standards and Requirements) in the City Storm Water Standards Manual.

3. A completed and signed Tier 2 Construction SWPPP Site Assessment Form (attached)

4. All supporting documentation, studies and reports as required to comply with the Municipal Permit and City Standards including any needed hydrology and hydraulic calculations, soils and geotechnical reports, spill prevention plan and manufacturers information and other data needed to clarify and support of the proposed storm water pollution prevention plan.

Included with this template is a Tier 2 Construction SWPPP Required Elements Checklist that should be used by the qualified Construction SWPPP preparer during the preparation of the plan to ensure that all required elements are included into the plan.

Tier 2 Construction SWPPP Required Elements Checklist

Required Elements	Required for Project	Preparer Verification
Construction SWPPP Drawing Set		
1. Standard Storm Water Pollution Prevention Notes		
A. General Site Management Requirements Notes		
B. Rainy Season Site Management Requirements Notes		
C. Erosion Control Hydroseeding, Planting and Irrigation Notes		
D. Special site specific notes		
2. City SWMP identification number affixed for high priority projects		
3. Construction Threat to Storm Water Quality rating (high or medium inspection frequency required?)		
4. Regional Water Board WDID Number shall be affixed for small linear utility projects as appropriate		
5. Project Location		
6. Legend		
7. Description of work		
A. Quantities (cut, fill, import, export)		
B. Area of disturbance		
C. Site conditions description		
1) Soils type		
8. Benchmark Information		
9. Preparer's signature and seal as appropriate		
10. City title block		
11. Emergency contact name, company and phone number		
12. Water shed project drains to listed		
13. Site Plan		
A. Existing topographic and cultural features of site and immediate vicinity as appropriate		
B. Scale and north arrow		
C. Project boundary and property lines		
D. Proposed grading contours and slopes clearly shown		

E. Staging areas, equipment storage, refueling, stockpiling and maintenance areas identified		
F. Storm drain inlets, open channels and natural drainages and watercourses that flow onto or drain off of the project site clearly delineated		
G. Potential source points of pollutants (fueling locations, waste container areas, wash racks, hazardous materials storage, etc)		
H. Site access locations		
I. Proposed BMPs – location and description		
1) Perimeter controls		
2) Erosion controls		
3) Sediment controls		
4) Tracking controls		
5) Non-storm water management controls		
6) Waste management and materials pollution controls		
7) Additional controls (as needed)		
8) Advanced treatment methods (as needed)		
J. Toxic or hazardous material contamination or spill areas		
K. Existing site BMP installations		
14. BMP detail drawings as needed		
Construction SWPPP Supplemental Documentation		
1. Storm Water Compliance Form for a Tier 2 Construction SWPPP completed and signed		
2. Tier 2 Site Assessment Form completed and signed		
3. Hydrology and hydraulic calculations (as needed for sediment basins and sizing of drainage swales to handle drainage during construction		
4. Soils report (as needed when proposed BMP installation may affect ground water, slope stability or other geotechnical site condition)		

Appendix G

Tier 2 Construction SWPPP Plan Review Checklist

Tier 2 Construction SWPPP Review Checklist

PROJECT ID NO._____ PROJECT NAME_____

PLANCHECKER_____ DRAWING NO._____ DATE_____

	1st Chk	2nd Chk	3rd Chk	Mylar	Comments
I. CONSTRUCTION SWPPP DRAWING					
1. ALL SHEETS					
A. Medium (to be reviewed at time of submission of final plan check)					
1) 24"x36" mylar film with title block (Alternative medium may be approved by Deputy City Engineer or designee)					
2) No "sticky-back", glued or taped on or together sections					
3) Drawing with waterproof ink or photographically reproduced					
B. Drafting					
1) Signed by the Qualified SWPPP Preparer					
2) Marked with the name, address & telephone number of the Qualified SWPPP Preparer preparing the plan & date of preparation					
3) Consecutively numbered & the total number of sheets shown					
4) Lettered in a neat & legible style no lettering smaller than 1/8"					
5) Title with the name & discretionary permit number of the City approval					
6) Prepared to appropriate Scale(s)					
7) Drawn as separate plans from Grading Plans, Building Plans or Improvement Plans					
8) Use standard plans & details to maximum extent					
9) Clearly designate between existing conditions & work proposed					
10) Scale noted, north arrow & bar scale provided					
11) No duplication of any section or detail letter designation.					
2. TITLE SHEET					
A. Erosion Control Notes Provided					
1) Standard Notes					
2) Supplemental special notes					
B. Project Location					
1) Legal description					
2) Assessor's parcel number					
3) Vicinity map (may be waived by Deputy City Engineer or designee)					
C. Legend					
1) Symbols per County Standards					

√ = Acceptable ? = Unclear, Provide More Data N/A = Not Applicable X = Not Acceptable (provide reason for unacceptability in comment section)

	1st Chk	2nd Chk	3rd Chk	Mylar	Comments
2) Every symbol used on the plans is shown in the legend					
3) Every symbol description clear & unequivocal					
D. Description & Quantities of Work					
1) Quantities for each item constructed or installed per these plans					
2) Erosion control Structural BMPs					
3) Standard references listed					
E. Site Plan - (certain site plan requirements may be waived for projects not requiring a grading plan per the approval of the Deputy City Engineer or designee)					
1) Full project site area shown (on one sheet if possible)					
2) Adequate adjacent site area shown to clearly indicate drainage courses that flow onto or off of the site					
3) Topography extends minimum 15' beyond limits of work & over entire property					
4) Existing contours and cultural features (screened back – 60% matte)					
5) Proposed contours and cultural features					
6) Existing & proposed contours clearly differentiated					
7) Slope symbols used only on slopes 2:1 or steeper					
8) Degree of slope shown for all slopes					
9) Fill slopes shaded					
10) Proposed lot lines shown					
11) Existing lot lines shown & dimensioned					
12) Street name or designations					
F. Drainage Facilities and Water Courses					
1) Storm drains and inlets existing and proposed					
2) Water courses and natural drainages shown with arrows indicating direction of flow					
3) Down drains					
4) Paved swales & terrace drains shown with arrows indicating direction of flow					
5) Existing and proposed basins					
G. Detail Drawings (Only when necessary. Generally refer to CASQA reference drawings)					
1) Modifications to standard drawings (CASQA or others) should be detailed					
H. Proposed Storm Water BMPs					
1) BMPs shown in bold ink and clearly visible					
2) BMP notes and identifiers bolded and clearly shown					

√ = Acceptable ? = Unclear, Provide More Data N/A = Not Applicable X = Not Acceptable (provide reason for unacceptability in comment section)

	1st Chk	2nd Chk	3rd Chk	Mylar	Comments
3) Proper CASQA (or other standard) designations used					
4) Perimeter control shown					
a. Flows onto site contained or diverted around construction area					
b. Flows off-site mitigated through retention, dissipation or other means					
c. Perimeter silt fencing, fiber rolls or other sediment control BMP for sloped areas or areas of sheet flow					
5) Erosion control shown					
a. Existing vegetation preserved where possible					
b. BMP specified for all sloped areas 3:1 or steeper					
c. Minimize area and duration of exposed soils					
6) Sediment control shown					
a. Basin or other appropriate BMP shown for flat areas less than 3:1					
b. Onsite and offsite inlets protected with storm drain inlet protection, gravel bags or other appropriate BMP					
c. Onsite earth swales and water courses protected with check dams, gravel bags, fiber rolls or other appropriate BMP					
d. Additional controls proposed for sites draining directly to receiving waters					
7) Tracking control shown					
a. Limit vehicle and equipment access points onto site					
b. Stabilized construction entrance called out on plan					
8) Non-Storm Water Management BMP indicated on plan					
a. Vehicle and equipment fueling and maintenance areas identified and protected					
b. Concrete Finishing and curing protections					
9) Waste Management and Materials Control BMPs					
a. Material Delivery and Storage BMPs indicated					
b. Stockpile management BMPs indicated					
c. Concrete mixer wash out BMP indicated					
I. General Site Management					
1) All weather access provide to basins and other BMPs that require cleaning or maintenance during rainy season					
2) 24 hour telephone number for emergency					

	1st Chk	2nd Chk	3rd Chk	Mylar	Comments
erosion control person and name of specific individual with authority and responsibility for erosion control					
3) Schedule for completion of installation of erosion control facilities					
4) Erosion control planting & method of starting & maintaining growth (irrigation)					
5) "Weather triggered" action plan for deploying BMPs with 48 hours of a predicted rain					
6) Description of standby BMP materials plan					
J. Project Conditions of Approval (list if applicable.)					
1)					
2)					
3. ADDITIONAL PLAN SHEETS (Additional plan sheets as required to adequately depict required BMP details or depict the site plan with an appropriate scale to clearly show all existing and proposed features)					
II. SUPPLEMENTAL DOCUMENTATION					
1. STORM WATER COMPLIANCE FORM (properly filled out and signed by Owner or Owner's Agent including appropriate City approval initial)					
2. COMPLETED SITE ASSESSMENT FORM					
3. SPILL PREVENTION PLAN (as required)					
5. SOILS/GEOTECHNICAL INVESTIGATION REPORT (As needed for geotechnical safety. Follow format indicated on Grading Plan Checklist when required)					
6. CALCULATIONS (As needed for projects with sedimentation basins or significant on-site/off-site drainage flows to determine sizing of swales and potential for erosive velocities)					
A. All					
1) All pages numbered					
2) Total number of pages on each page					
3) Each page labeled with the name address & telephone number of the preparing firm					
4) Neat & legible					
5) Indexed					
6) In logical order					
7) Cross-referenced to plans					
8) Bound					
9) Sturdy cover					
10) Signed, sealed & dates of preparation and expiration of registration applied on report cover or on bound-in cover letter					
11) Cover prominently labeled with subject, name & number of the discretionary permit for the project.					
B. Hydrology Per San Diego County Standards					

	1st Chk	2nd Chk	3rd Chk	Mylar	Comments
1) 1984 rainfall intensity curves					
2) Appropriate value of C					
3) Appropriate design method					
a. U.S. Army Corps of Engineers HEC series					
b. Soil Conservation Service Unit Hydrography					
c. Rational Method (Q=CIA) (0.5 sq. mile max)					
4) TI correctly completed					
5) If correctly completed					
6) Tc correct					
7) Six hour/24 intensities correctly balanced					
8) Documentation provided or "plain english" output for computer generated reports					
C. Hydraulic					
1) Documentation provided or "plain english" output for computer generated reports					
2) Clear copies provided or all charts, maps, nomogrpahs or other graphic used					
3) Cite general formula before inserting specific values (i.e. Q=AV; Q= 2.5 x 18 = 4.75 cfs)					
7. ENGINEER'S ESTIMATE (Needed only for projects with grading plans. Follow grading plan checklist requirements)					

Additional Comments:_____

√ = Acceptable ? = Unclear, Provide More Data N/A = Not Applicable X = Not Acceptable (provide reason for unacceptability in comment section)

Appendix H

Tier 1 Construction SWPPP Standard Template

CITY OF CARLSBAD
STANDARD FORM - TIER 1 STORM WATER POLLUTION PREVENTION PLAN

STORM WATER COMPLIANCE CERTIFICATE

- ✓ My project is not in a category of permit types exempt from the Construction SWPPP requirements
- ✓ My project is not located inside or within 200 feet of an environmentally sensitive area with a significant potential for contributing pollutants to nearby receiving waters by way of storm water runoff or non-storm water discharge(s).
- ✓ My project does not requires a grading plan pursuant to the Carlsbad Grading Ordinance (Chapter 15.16 of the Carlsbad Municipal Code)
- ✓ My project will not result in 2,500 square feet or more of soils disturbance including any associated construction staging, stockpiling, pavement removal, equipment storage, refueling and maintenance areas that meets one or more of the additional following criteria:
  - located within 200 feet of an environmentally sensitive area or the Pacific Ocean; and/or,
  - disturbed area is located on a slope with a grade at or exceeding 5 horizontal to 1 vertical; and/or
  - disturbed area is located along or within 30 feet of a storm drain inlet, an open drainage channel or watercourse; and/or
  - construction will be initiated during the rainy season or will extend into the rainy season (Oct. 1 through April 30).

I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT ALL OF THE ABOVE CHECKED STATEMENTS ARE TRUE AND CORRECT. I AM SUBMITTING FOR CITY APPROVAL A TIER 1 CONSTRUCTION SWPPP PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF CITY STANDARDS.

I UNDERSTAND AND ACKNOWLEDGE THAT I MUST: (1) IMPLEMENT BEST MANAGEMENT PRACTICES (BMPS) DURING CONSTRUCTION ACTIVITIES TO THE MAXIMUM EXTENT PRACTICABLE TO MINIMIZE THE MOBILIZATION OF POLLUTANTS SUCH AS SEDIMENT AND TO MINIMIZE THE EXPOSURE OF STORM WATER TO CONSTRUCTION RELATED POLLUTANTS; AND, (2) ADHERE TO, AND AT ALL TIMES, COMPLY WITH THIS CITY APPROVED TIER 1 CONSTRUCTION SWPPP THROUGHTOUT THE DURATION OF THE CONSTRUCTION ACTIVITIES UNTIL THE CONSTRUCTION WORK IS COMPLETE AND APPROVED BY THE CITY OF CARLSBAD.

_____
OWNER(S)/OWNER'S AGENT NAME (PRINT)

_____ _____
OWNER(S)/OWNER'S AGENT NAME (SIGNATURE) DATE

STORM WATER POLLUTION PREVENTION NOTES

1. ALL NECESSARY EQUIPMENT AND MATERIALS SHALL BE AVAILABLE ON SITE TO FACILITATE RAPID INSTALLATION OF EROSION AND SEDIMENT CONTROL BMPS WHEN RAIN IS EMINENT.
2. THE OWNER/CONTRACTOR SHALL RESTORE ALL EROSION CONTROL DEVICES TO WORKING ORDER TO THE SATISFACTION OF THE CITY ENGINEER AFTER EACH RUN-OFF PRODUCING RAINFALL.
3. THE OWNER/CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL MEASURES AS MAY BE REQUIRED BY THE CITY ENGINEERING OR BUILDING INSPECTOR DUE TO UNCOMPLETED GRADING OPERATIONS OR UNFORESEEN CIRCUMSTANCES WHICH MAY ARISE.
4. ALL REMOVABLE PROTECTIVE DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FIVE (5) DAY RAIN PROBABILITY FORECAST EXCEEDS FORTY PERCENT (40%). SILT AND OTHER DEBRIS SHALL BE REMOVED AFTER EACH RAINFALL.
5. ALL GRAVEL BAGS SHALL BE BURLAP TYPE WITH 3/4 INCH MINIMUM AGGREGATE.
6. ADEQUATE EROSION AND SEDIMENT CONTROL AND PERIMETER PROTECTION BEST MANAGEMENT PRACTICE MEASURES MUST BE INSTALLED AND MAINTAINED.

SPECIAL NOTES

PROJECT INFORMATION

Site Address: _____

Assessor's Parcel Number: _____

Project ID: _____

Construction Permit No.: _____

Estimated Construction Start Date _____

Project Duration _____Months

Emergency Contact:

Name: _____

24 hour Phone: _____

Perceived Threat to Storm Water Quality

Medium Low

If medium box is checked, must attach a site plan sheet showing proposed work area and location of proposed structural BMPs

For City Use Only

CITY OF CARLSBAD
STANDARD TIER 1 SWPPP

Approved By: _____
Date: _____

		Erosion Control BMPs					Sediment Control BMPs									Tracking Control BMPs			Non-Storm ater Management BMPs					Waste Management and Materials Pollution Control BMPs							
	Best Management Practice (BMP) Description →	Geotextiles & Mats	Wood Mulching	Earth Dikes and Drainage Swales	Slope Drains		Silt Fence	Sediment Trap	Check Dam	Fiber Rolls	Gravel Bag Berm	Street Sweeping and Vacuuming	Sandbag Barrier	Storm Drain Inlet Protection		Stabilized Construction Ingress/Egress	Stabilized Construcion Roadway		Water Conservation Practices	Paving and Grinding Operations	Potable Water/Irrigation	Vehicle and Equipment Cleaning		Material Delivery and Storage	Material Use	Stockpile Management	Spill Prevention and Control	Solid Waste Management	Hazardous Waste Management	Concrete Waste Management	
	CASQA Designation →	EC-7	EC-8	EC-9	EC-11		SE-1	SE-3	SE-4	SE-5	SE-6	SE-7	SE-8	SE-10		TR-1	TR-2		NS-1	NS-3	NS-7	NS-8		WM-1	WM-2	WM-3	WM-4	WM-5	WM-6	WM-8	
	Construction Activity																														
	Grading/Soil Disturbance																														
	Trenching/Excavation																														
	Stockpiling																														
	Drilling/Boring																														
	Concrete/Asphalt Sawcutting																														
	Concrete flatwork																														
	Paving																														
	Conduit/Pipe Installation																														
	Stucco/Mortar Work																														
	Waste Disposal																														
	Staging/Lay Down Area																														
	Equipment Maintenance and Fueling																														
	Hazardous Substance Use/Storage																														
	Dewatering																														
	Site Access Across Dirt																														
	Other (list):																														

Instructions: Begin by reviewing the list of construction activities and checking the box to the left of any activity that will occur during the proposed construction. Add any other activity descriptions in the blank activity description boxes provided for that purpose and place a check in the box immediately to the left of the added activity description. For each activity descrribed, pick one or more best management practices (BMPs) from the list located alon the top of the form. Then place an X in the box at the place where the activity row intersects with the BMP column. Do this for each activity that was checked off and for each of the selected BMPs selected from the list. For Example – If the project includes site access across dirt, then check the box to the left of "Site Access Across Dirt". Then review the list for something that applies such as "Stabilized Construcion Ingress/Egress" under Tracking Control. Follow along the "Site Access Across Dirt" row until you get to the "Stabilized Construction Ingress/Egress" column and place an X in the box where the two meet. As another example say the project included a stockpile that you intend to cover with a plastic sheet. Since plastic sheeting is not on the list of BMPs, then write in "Cover with Plastic" in the blank column under the heading Erosion Control BMPs. Then place an X in the box where "Stockpiling" row intersects the new "Cover with Plastic" column.

To learn more about what each BMP description means, you may wish to review the BMP Reference Handout prepared to assist applicants in the selection of appropriate Best Management Practice measures. The reference also explains the California Stormwater Quality Association (CASQA) designation and how to apply the various selected BMPs to a project.

Scale of map

Legend

Site Map

Features displayed on the map must include:

- An outline of the entire property
- Location and brief description of construction activity areas (e.g. grading, building, trenching, fueling areas, waste container area, wash racks, hazardous material storage areas, etc.)
- Location and flow direction arrows for existing drainage facilities (ditches, channels, inlets, storm drains, etc.)
- Location of existing storm water BMP controls (sediment basins, oil/ water separators, sumps, etc.)
- Location of proposed storm water BMP controls with brief description or legend reference

Appendix I

City Standard
Storm Water Pollution Prevention Notes

STORM WATER POLLUTION PREVENTION

GENERAL SITE MANAGEMENT REQUIREMENTS

THE FOLLOWING GENERAL SITE MANAGEMENT REQUIREMENTS SHALL BE ADHERED TO THROUGHOUT THE DURATION OF THE CONSTRUCTION WORK (YEAR ROUND):

1. IN CASE EMERGENCY WORK IS REQUIRED, CONTACT _____ FROM _____ AT _____.

2. DEVICES SHOWN ON CITY APPROVED PLANS SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE ENGINEERING INSPECTOR.

3. THE CONTRACTOR SHALL RESTORE ALL EROSION CONTROL DEVICES TO WORKING ORDER TO THE SATISFACTION OF THE CITY ENGINEER AFTER EACH RUN-OFF PRODUCING RAINFALL.

4. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL MEASURES AS MAY BE REQUIRED BY THE CITY ENGINEER DUE TO UNCOMPLETED GRADING OPERATIONS OR UNFORESEEN CIRCUMSTANCES WHICH MAY ARISE.

5. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.

6. GRADED AREAS AROUND THE PROJECT PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPE AT THE CONCLUSION OF EACH WORKING DAY.

7. ALL REMOVABLE PROTECTIVE DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FIVE (5) DAY RAIN PROBABILITY FORECAST EXCEEDS FORTY PERCENT (40%). SILT AND OTHER DEBRIS SHALL BE REMOVED AFTER EACH RAINFALL.

8. ALL GRAVEL BAGS SHALL BE BURLAP TYPE WITH 3/4 INCH MINIMUM AGGREGATE.

9. ALL GRADED AREAS MUST HAVE EROSION CONTROL PROTECTION BEST MANAGEMENT PRACTICE MEASURES PROPERLY INSTALLED.

10. ADEQUATE PERIMETER PROTECTION BEST MANAGEMENT PRACTICE MEASURES MUST BE INSTALLED AND MAINTAINED.

11. ADEQUATE SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MEASURES MUST BE INSTALLED AND MAINTAINED.

12. ADEQUATE MEASURES TO CONTROL OFFSITE SEDIMENT TRACKING MUST BE INSTALLED AND MAINTAINED.

13. A MINIMUM OF 125% OF THE MATERIAL NEEDED TO INSTALL STANDBY BEST MANAGEMENT PRACTIVE MEASURES TO PROTECT THE EXPOSED AREAS FROM EROSION AND PREVENT SEDIMENT DISCHARGES, MUST BE STORED ONSITE. AREAS ALREADY PROTECTED FROM EROSION USING PHYSICAL STABILIZATION OR ESTABLISHED VEGETATION STABILIZATION MEASURES ARE NOT CONSIDERED TO BE “EXPOSED” FOR PURPOSES OF THIS REQUIREMENT.

14. THE OWNER/DEVELOPER/CONTRACTOR MUST HAVE AN APPROVED "WEATHER TRIGGERED" ACTION PLAN AND BE ABLE TO DEPLOY STANDBY BEST MANAGEMENT PRACTICE MEASURES TO COMPLETELY PROTECT THE EXPOSED PORTIONS OF THE SITE WITHIN 48 HOURS OF A PREDICTED STORM EVENT (A PREDICTED STORM EVENT IS DEFINED AS A FORECASTED, 40% CHANCE OF RAIN BY THE NATIONAL WEATHER SERVICE). ON REQUEST, THE OWNER/CONTRACTOR MUST PROVIDE PROOF OF THIS CAPABILITY THAT IS ACCEPTABLE TO THE CITY.

15. DEPLOYMENT OF PHYSICAL OR VEGETATION EROSION CONTROL MEASURES MUST COMMENCE AS SOON AS SLOPES ARE COMPLETED. THE OWNER/CONTRACTOR MAY NOT CONTINUE TO RELY ON THE ABILITY TO DEPLOY STANDBY BEST MANAGEMENT PRACTICE MATERIALS TO PREVENT EROSION OF SLOPES THAT HAVE BEEN COMPLETED.

16. UNLESS OTHERWISE SPECIFIED ON THE GRADING PLANS OR THE CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN DOCUMENTS, THE AREA THAT CAN BE CLEARED, GRADED, AND LEFT EXPOSED AT ONE TIME IS LIMITED TO THE AMOUNT OF ACREAGE THAT THE CONTRACTOR CAN ADEQUATELY PROTECT PRIOR TO A PREDICTED RAINSTORM. IT MAY BE NECESSARY TO DEPLOY EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MEASURES IN AREAS THAT ARE NOT COMPLETED AND ARE NOT ACTIVELY BEING WORKED BEFORE ADDITIONAL GRADING IS ALLOWED TO PROCEED, AT THE DISCRETION OF THE PUBLIC WORKS INSPECTOR.

<u>RAINY SEASON SITE MANAGEMENT REQUIREMENTS (OCTOBER 1 – APRIL 30)</u>

THE FOLLOWING RAINY SEASON SITE MANAGEMENT REQUIREMENTS SHALL BE ADHERED TO THROUGHOUT THE RAINY SEASON DEFINED AS BEGINNING ON OCTOBER 1 OF ANY YEAR AND EXTENDING THROUGH APRIL 30TH OF THE FOLLOWING YEAR:

1. EROSION CONTROL, PERIMETER PROTECTION AND SEDIMENT CONTROL BEST MANAGEMETN PRACTICE MEASURES MUST BE UPGRADED IF NECESSARY TO PROVIDE SUFFICIENT PROTECTION FOR STORMS LIKELY TO OCCUR DURING THE RAINY SEASON.

2. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON. ALL NECESSARY MATERIALS SHALL BE STOCKPILED ON SITE AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS EMINENT.

3. ADEQUATE PHYSICAL OR VEGETATION EROSION CONTROL BEST MANAGEMENT PRACTICE MEASURES MUST BE INSTALLED AND ESTABLISHED FOR ALL COMPLETED SLOPES PRIOR TO THE START OF THE RAINY SEASON. THESE BEST MANAGEMENT PRACTICE MEASURES MUST BE MAINTAINED THROUGHOUT THE RAINY SEASON. IF A SELECTED BEST MANAGEMENT PRACTICE MEASURE FAILS, IT MUST BE REPAIRED AND IMPROVED, OR REPLACED WITH AN ACCEPTABLE ALTERNATE AS SOON AS IT IS SAFE TO DO SO. THE FAILURE OF A BEST MANAGEMENT PRACTICE MEASURE INDICATES IT WAS NOT ADEQUATE FOR THE CIRCUMSTANCES IN WHICH IT WAS USED. REPAIRS OR REPLACEMENTS MUST THEREFORE PUT A MORE ROBUST BEST MANAGEMENT PRACTICE MEASURE IN PLACE.

4. ALL VEGETATION EROSION CONTROL MUST BE ESTABLISHED PRIOR TO THE RAINY SEASON TO BE CONSIDERED AS A BEST MANAGEMENT PRACTICE MEASURE.

5. THE AMOUNT OF EXPOSED SOIL ALLOWED AT ONE TIME SHALL NOT EXCEED THAT WHICH CAN BE ADEQUATELY PROTECTED BY DEPLOYING STANDBY EROSION CONTROL AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MEASURES PRIOR TO A PREDICTED RAINSTORM.

6. A DISTURBED AREA THAT IS NOT COMPLETED BUT THAT IS NOT BEING ACTIVELY GRADED MUST BE FULLY PROTECTED FROM EROSION IF LEFT FOR 10 OR MORE DAYS. THE ABILITY TO DEPLOY STANDBY BEST MANAGEMENT PRACTICE MEASURE MATERIALS IS NOT SUFFICIENT FOR THESE AREAS. BEST MANAGEMENT PRACTICE MEASURES MUST ACTUALLY BE DEPLOYED.

<u>EROSION CONTROL HYDROSEEDING, PLANTING AND IRRIGATION</u>

1. ALL PERMANENT AND TEMPORARY EROSION CONTROL PLANTING AND IRRIGATION SHALL BE INSTALLED AND MAINTAINED AS REQUIRED IN SECTION 212 OF THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

    A HYDROSEEDING SHALL BE APPLIED TO:
        1 ALL SLOPES THAT ARE GRADED 6:1 (HORIZONTAL TO VERTICAL) OR STEEPER WHEN THEY ARE:
            a. THREE FEET OR MORE IN HEIGHT AND ADJACENT TO A PUBLIC WALL OR STREET.
            b. ALL SLOPES 4 FEET OR MORE IN HEIGHT.
        2 AREAS GRADED FLATTER THAN 6:1 WHEN ANY OF THE FOLLOWING CONDITIONS EXIST:
            a. NOT SCHEDULED FOR IMPROVEMENTS (CONSTRUCTION OR GENERAL LANDSCAPING) WITHIN 60 DAYS OF ROUGH GRADING.
            b. IDENTIFIED BY THE PARKS AND RECREATION DIRECTOR AS HIGHLY VISIBLE TO THE PUBLIC.
            c. HAVE ANY SPECIAL CONDITION IDENTIFIED BY THE CITY ENGINEER THAT WARRANTS IMMEDIATE TREATMENT.

    B HYDROSEEDED AREAS SHALL BE IRRIGATED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:
        1 ALL SLOPES THAT ARE GRADED 6:1 OR STEEPER AND THAT ARE:
            a. THREE TO EIGHT FEET IN HEIGHT SHALL BE IRRIGATED BY HAND WATERING FROM QUICK COUPLERS/HOSE BIBS OR A CONVENTIONAL SYSTEM OF LOW PRECIPITATION SPRINKLER HEADS PROVIDING 100% COVERAGE.
            b. GREATER THAN 8 FEET IN HEIGHT SHALL BE WATERED BY A CONVENTIONAL SYSTEM OF LOW PRECIPITATION SPRINKLER HEADS PROVIDING 100% COVERAGE.
        2 AREAS SLOPED LESS THAN 6:1 SHALL BE IRRIGATED AS APPROVED BY THE CITY ENGINEER, PRIOR TO HYDROSEEDING. THE DEVELOPER SHALL SUBMIT A PROPOSED SCHEME TO PROVIDE IRRIGATION TO THE CITY ENGINEER. THE PROPOSAL SHALL BE SPECIFIC REGARDING THE NUMBERS, TYPES, AND COSTS OF THE ELEMENTS OF THE PROPOSED SYSTEM.
        3 IRRIGATION SHALL MAINTAIN THE MOISTURE LEVEL OF THE SOIL AT THE OPTIMUM LEVEL FOR THE GROWN OF THE HYDROSEEDED GROWTH.

C HYDROSEEDING MIX SHALL CONSIST OF ALL OF THE FOLLOWING:
   1 SEED MIX SHALL CONSIST OF NO LESS THAN:
      a. 20 lbs. PER ACRE OF ROSE CLOVER
      b. 20 lbs. PER ACRE OF ZORRO FESCUE
      c. 3 lbs. PER ACRE OF E SCHOOL CIA CALIFORNICA
      d. 4 lbs. PER ACRE OF ACHILLEA MILLEFOLIA
      e. 3 lbs. PER ACRE OF ALYSSUM (CARPET OF SNOW)
      f. 1/2 lb. PER ACRE OF DIMORPHOLECA
      g. ITEMS c,d,e, AND f OF THIS SUBSECTION MAY BE OMITTED ON LOCATIONS WHERE THE AREA BEING HYDROSEEDED IS NOT VISIBLE FROM EITHER A PUBLIC STREET OR RESIDENTIAL STRUCTURES.
      h. ITEM a OF THIS SUBSECTION MUST BE INOCULATED WITH A NITROGEN FIXING BACTERIA AND APPLIED DRY EITHER BY DRILLING OR BROADCASING BEFORE HYDROSEEDING.
      i. ALL SEED MATERIALS SHALL BE TRANSPORTED TO THE JOBSITE IN UNOPENED CONTAINERS WITH THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE CERTIFICATION TAG ATTACHED TO, OR PRINTED ON SAID CONTAINERS.
      j. NON-PHYTO-TOXIC WETTING AGENTS MAY BE ADDED TO THE HYDROSEED SLURRY AT THE DISCRETION OF THE CONTRACTOR.

   2 TYPE 1 MULCH APPLIED AT THE RATE OF NO LESS THAN 2000 lbs PER ACRE. TYPE 6 MULCH (STRAW) MAY BE SUBSTITUTED, ALL OR PART, FOR HYDRAULICALLY APPLIED FIBER MATERIAL. WHEN STRAW IS USED, IT MUST BE ANCHORED TO THE SLOPE BY MECHANICALLY PUNCHING NO LESS THAN 50% OF THE STRAW INTO THE SOIL.
   3 FERTILIZER CONSISTING OF AMMONIUM PHOSPHATE SULFATE, 16-20-0, WITH 15% SULPHUR APPLIED AT THE RATE OF 500 lbs. PER ACRE.

D AREAS TO BE HYDROSEEDED SHALL BE PREPARED PRIOR TO HYDROSEEDING BY:
   1 ROUGHENING THE SURFACE TO BE PLANTED BY ANY OR A COMBINATION OF:
      a. TRACK WALKING SLOPES STEEPER THAN 6:1
      b. HARROWING AREAS 6:1 OR FLATTER THAT ARE SUFFICIENTLY FRIABLE.
      c. RIPPING AREAS THAT WILL NOT BREAK UP USING ITEMS a OR b ABOVE.
   2 CONDITIONING THE SOILS SO THAT IT IS SUITABLE FOR PLANTING BY:
      a. ADJUSTING THE SURFACE SOIL MOISTURE TO PROVIDE A DAMP BUT NOT SATURATED SEED BED.
      b. THE ADDITION OF SOIL AMENDMENTS, PH ADJUSTMENT, LEACHING COVERING SALINE SOILS TO PROVIDED VIABLE CONDITIONS FOR GROWTH.

E HYDROSEEDED AREAS SHALL BE MAINTAINED TO PROVIDE A VIGOROUS GROWTH UNTIL THE PROJECT IS PERMANENTLY LANDCAPED OR, FOR AREAS WHERE HYDROSEEDING IS THE PERMANENT LANDSCAPING, UNTIL THE PROJECT IS COMPLETED AND ALL BONDS RELEASED.

2. ALL SLOPES SHALL HAVE IRRIGATION INSTALLED AND BE STABILIZED, PLANTED AND/OR HYDROSEEDED WITHIN TEN (10) DAYS OF THE TIME WHEN EACH SLOPE IS BROUGHT TO GRADE AS SHOWN ON THE APPROVED GRADING PLANS.

3. SHOULD GERMINATION OF HYDROSEEDED SLOPES FAIL TO PROVIDE EFFICIENT COVERAGE OF GRADED SLOPES (90% COVERAGE) PRIOR TO OCTOBER 1, THE SLOPES SHALL BE STABILIZED BY AN APPROPRIATE EROSION CONTROL MATTING MATERIAL APPROVED BY THE PUBLIC WORKS INSPECTOR.

4. LANDSCAPING SHALL BE ACCOMPLISHED ON ALL SLOPES AND PADS AS REQUIRED BY THE CITY OF CARLSBAD LANDSCAPE MANUAL, THE LANDSCAPING PLANS FOR THIS PROJECT, DRAWING NO. _____, AND/OR AS DIRECTED BY THE CITY ENGINEER OR PLANNING DIRECTOR.

5. THE OWNER/APPLICANT SHALL ENSURE THAT ALL CONTRACTORS SHALL COORDINATE THE WORK OF THIS CONSTRUCTION SWPPP WITH THAT SHOWN ON ANY GRADING PLANS, LANDSCAPE AND IRRIGATION PLANS AND IMPROVEMENT PLANS AS REQUIRED FOR THIS PROJECT WORK.

Appendix J

Excerpts from EPA Guidelines for Selecting Construction BMPs

Chapter 4: SWPPP Development—Selecting Erosion and Sediment Control BMPs

▶ **This chapter presents a brief discussion of erosion and sediment control principles and a discussion of some commonly used BMPs.**

This document is not intended as an engineering or design manual on BMPs. The engineer or other qualified person that develops the details of your sediment and erosion control plan should be using the appropriate state or local specifications. The descriptions below provide a kind of checklist of the things to look for and some helpful installation and maintenance hints.

Erosion and sediment controls are the structural and non-structural practices used during the construction process to keep sediment in place (erosion control) and to capture any sediment that is moved by stormwater before it leaves the site (sediment control). Erosion controls—keeping soil where it is—are the heart of any effective SWPPP. Your SWPPP should rely on erosion controls as the primary means of preventing stormwater pollution. Sediment controls provide a necessary second line of defense to properly designed and installed erosion controls.

The suite of BMPs that you include in your SWPPP should reflect the specific conditions at the site. The information that you collected in the previous steps should help you select the appropriate BMPs for your site. An effective SWPPP includes a combination or suite of BMPs that are designed to work together.

Ten Keys to Effective Erosion and Sediment Control (ESC)

The ultimate goal of any SWPPP is to protect rivers, lakes, wetlands, and coastal waters that could be affected by your construction project. The following principles and tips should help you build an effective SWPPP. **Keep in mind that there are many BMP options available to you. We have selected a few common BMPs to help illustrate the principles discussed in this chapter.**

Erosion Control (keeping the dirt in place) and Minimizing the Impact of Construction

1. **Minimize disturbed area and protect natural features and soil**
2. **Phase construction activity**
3. **Control stormwater flowing onto and through the project**
4. **Stabilize soils promptly**
5. **Protect slopes**

Sediment Controls (the second line of defense)

6. **Protect storm drain inlets**
7. **Establish perimeter controls**
8. **Retain sediment on-site and control dewatering practices**
9. **Establish stabilized construction exits**
10. **Inspect and maintain controls**

Take a Closer Look...

BMPs in Combination

BMPs work much better when they are used in combination. For instance, a silt fence should not be used alone to address a bare slope. An erosion control BMP should be used to stabilize the slope, and the silt fence should serve as the backup BMP.

What does this mean to me?

Wherever possible, rely on erosion controls to keep sediment in place. Back up those erosion controls with sediment controls to ensure that sediment doesn't leave your site. Continually evaluate your BMPs. Are they performing well? Could the addition of a supplemental BMP improve performance? Should you replace a BMP with another one that might work better? Using BMPs in series also gives you some protection in case one BMP should fail.

Erosion Control and Minimizing the Impact of Construction

ESC Principle 1: Minimize disturbed area and protect natural features and soil. As you put together your SWPPP, carefully consider the natural features of the site that you assessed in Chapter 3. By carefully delineating and controlling the area that will be disturbed by grading or construction activities, you can greatly reduce the potential for soil erosion and stormwater pollution problems. Limit disturbed areas to only those necessary for the construction of your project. Natural vegetation is your best and cheapest erosion control BMP.

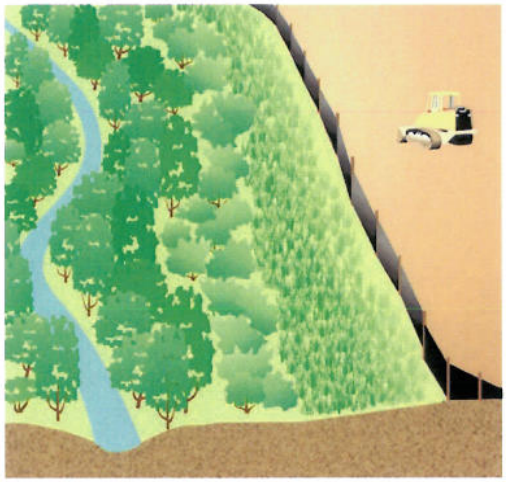


Figure 7. Protect vegetated buffers by using silt fence or other sediment controls.

Protecting and preserving topsoil is also a good BMP. Removing topsoil exposes underlying layers that are often more prone to erosion and have less infiltration capacity. Keeping topsoil in place preserves the natural structure of the soils and aids the infiltration of stormwater.

ESC Principle 2: Phase construction activity. Another technique for minimizing the duration of exposed soil is phasing. By scheduling or sequencing your construction work and concentrating it in certain areas, you can minimize the amount of soil that is exposed to the elements at any given time. Limiting the area of disturbance to places where construction activities are underway and stabilizing them as quickly as possible can be one of your most effective BMPs.

ESC Principle 3: Control stormwater flowing onto and through your project. Plan for any potential stormwater flows coming onto the project area from upstream locations, and divert (and slow) flows to prevent erosion. Likewise, the volume and velocity of on-site stormwater runoff should be controlled to minimize soil erosion.

Example BMP: Diversion Ditches or Berms

Description: Diversion ditches or berms direct runoff away from unprotected slopes and may also direct sediment-laden runoff to a sediment-trapping structure. A diversion ditch can be located at the upslope side of a construction site to prevent surface runoff from entering the disturbed area. Ditches or berms on slopes need to be designed for erosive velocities. Also, ensure that the diverted water is released through a stable outlet and does not cause downslope or downstream erosion or flooding.

Installation Tips:

- Divert run-on and runoff away from disturbed areas
- Ensure that the diversion is protected from erosion, using vegetation, geotextiles, or other appropriate BMPs
- Divert sediment-laden water to a sediment-trapping structure
- Use practices that encourage infiltration of stormwater runoff wherever possible

Maintenance:

- Inspect diversions and berms, including any outlets, regularly and after each rainfall
- Remove any accumulated sediment

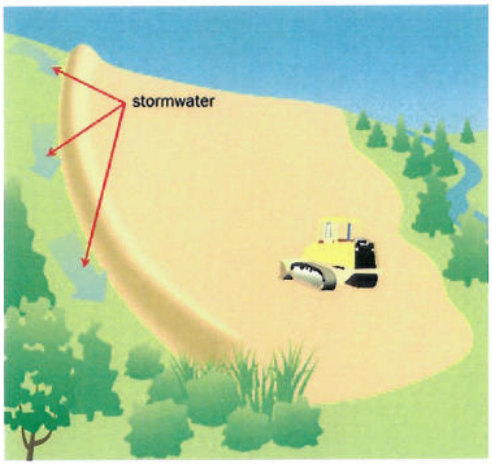


Figure 8. Illustration of a construction berm to divert stormwater away from the disturbed construction area.

ESC Principle 4: Stabilize soils promptly. Where construction activities have temporarily or permanently ceased, you should stabilize exposed soils to minimize erosion. You should have stabilization measures in place after grading activities have ceased (many permits require stabilization within a specified time frame). You can provide either temporary or permanent cover to protect exposed soils. Temporary measures are necessary when an area of a site is disturbed but where activities in that area are not completed or until permanent BMPs are established. Topsoil stockpiles should also be protected to minimize any erosion from these areas. Temporary-cover BMPs include temporary seeding, mulches, matrices, blankets and mats, and the use of soil binders (there may be additional state and local requirements for the use of chemical-based soil binders). Permanent-cover BMPs include permanent seeding and planting, sodding, channel stabilization, and vegetative buffer strips. Silt fence and other sediment control measures are not stabilization measures.

SWPPP Tip!

Final Stabilization

Once construction activity in an area is completed and the area is stabilized (typically by achieving 70 percent permanent vegetative cover), you can mark this area on your SWPPP and discontinue inspections in that area. By bringing areas of your site to final stabilization, you can reduce your workload associated with maintaining and inspecting BMPs. For more information on final stabilization, see Chapter 9.

Example BMP: Temporary Seeding

Description: Temporarily seeding an area to establish vegetative cover is one of the most effective, and least expensive, methods of reducing erosion. This approach, as a single BMP, might not be appropriate on steep slopes, when vegetation cannot be established quickly enough to control erosion during a storm event, or when additional activities might occur soon in the area.

Installation Tips:

- Seed and mulch area (the mulch provides temporary erosion protection by protecting the soil surface, moderating temperature, and retaining moisture while seeds germinate and grow)
- Water regularly, if needed, to ensure quick growth
- Maintain backup BMPs, such as silt fence or settling ponds

SWPPP Tip!

Wind Control BMPs

In areas where dust control is an issue, your SWPPP should include BMPs for wind-erosion control. These consist of mulching, wet suppression (watering), and other practices.

ESC Principle 5: Protect slopes. Protect all slopes with appropriate erosion controls. Steeper slopes, slopes with highly erodible soils, or long slopes require a more complex combination of controls. Erosion control blankets, bonded fiber matrices, or turf reinforcement mats are very effective options. Silt fence or fiber rolls may also be used to help control erosion on moderate slopes and should be installed on level contours spaced at 10- to 20-foot intervals. You can also use diversion channels and berms to keep stormwater off slopes.

Example BMP: Rolled erosion control products

Description: Erosion control products include mats, geotextiles, and erosion control blankets and products that provide temporary stabilization and help to establish vegetation on disturbed soils. Such products help control erosion and help establish vegetation and are often used on slopes, channels, or stream banks.

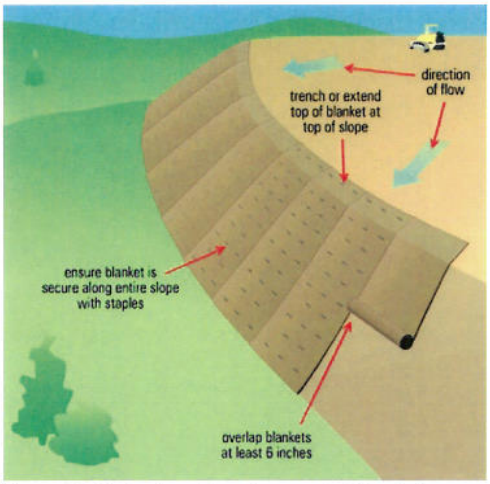


Figure 9. Illustration of erosion control blankets installed on slope.

Installation Tips:

- Use rolled erosion-control products on slopes steeper than 3 to 1 (horizontal to vertical) and in swales or long channels

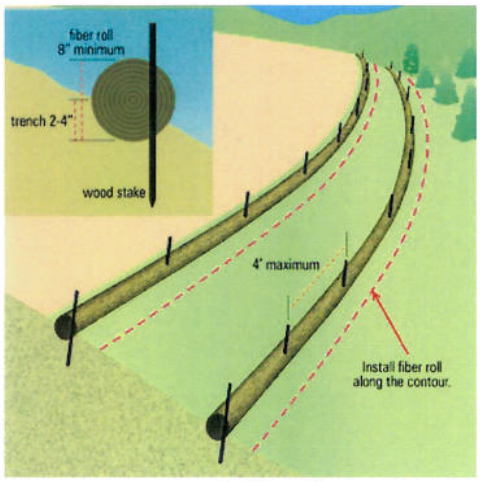


Figure 10. Illustration of a fiber roll installation along a slope.

- Trench the top of the blanket into the ground to prevent runoff from flowing under the blanket
- Overlap the lower end of the top mat over the top of the downslope mat to ensure that runoff stays on top of the blankets and mats
- Staple blankets and mats according to specifications

Maintenance:

- Periodically inspect for signs of erosion or failure
- Repair the blanket or mat if necessary
- Continue inspections until vegetation is established at the level required to qualify as final *stabilization*

ESC Principle 6: Protect storm drain inlets. Protect all inlets that could receive stormwater from the project until final stabilization of the site has been achieved. Install inlet protection before soil-disturbing activities begin. Maintenance throughout the construction process is important. Upon completion of the project, storm drain inlet protection is one of the temporary BMPs that should be removed. Storm drain inlet protection should be used not only for storm drains within the active construction project, but also for storm drains outside the project area that might receive stormwater discharges from the project. If there are storm drains on private property that could receive stormwater runoff from your project, coordinate with the owners of that property to ensure proper inlet protection.

Example BMP: Storm Drain Inlet Protection

Description: Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. Several types of filters are commonly used for inlet protection: silt fence, rock-filled bags, or block and gravel. The type of filter used depends on the inlet type (for example, curb inlet, drop inlet), slope, and volume of flow. Many different commercial inlet filters are also available. Some commercial inlet filters are placed in front of or on top of an inlet, while others are placed inside the inlet under the grate.

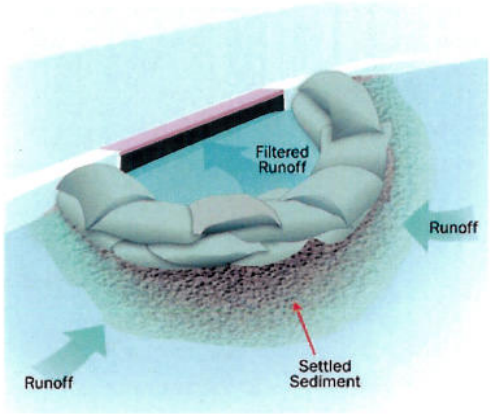


Figure 11. Illustration of a storm drain inlet with rock-filled bags filtering stormwater.

Installation Tips:

- Install inlet protection as soon as storm drain inlets are installed and before land-disturbance activities begin in areas with existing storm drain systems
- Protect all inlets that could receive stormwater from your construction project
- Use in conjunction with other erosion prevention and sediment control BMPs—remember, inlet protection is a secondary BMP!
- Design your inlet protection to handle the volume of water from the area being drained. Ensure that the design is sized appropriately.

Maintenance:

- Inspect inlets frequently and after each rainfall

- Remove accumulated sediment from around the device and check and remove any sediment that might have entered the inlet
- Replace or repair the inlet protection if it becomes damaged
- Sweep streets, sidewalks, and other paved areas regularly

SWPPP Tip!

Storm drain inlet protection should never be used as a primary BMP! Use erosion control techniques such as hydromulching or erosion-control blankets to prevent erosion. Use inlet protection and other sediment control BMPs as a *backup* or last line of defense.

ESC Principle 7: Establish perimeter controls. Maintain natural areas and supplement them with silt fence and fiber rolls around the perimeter of your site to help prevent soil erosion and stop sediment from leaving the site. Install controls on the downslope perimeter of your project (it is often unnecessary to surround the entire site with silt fence). Sediment barriers can be used to protect stream buffers, riparian areas, wetlands, or other waterways. They are effective only in small areas and should not be used in areas of concentrated flow.

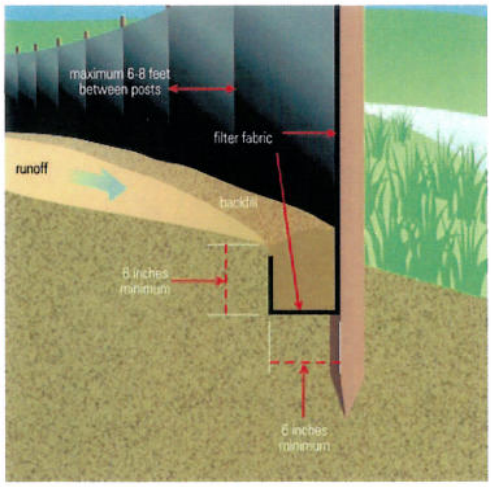


Figure 12. Illustration of proper techniques to use in installing silt fence.

Example BMP: Silt Fence and Fiber Rolls

Description: A silt fence is a temporary sediment barrier consisting of a geotextile attached to supporting posts and trenched into the ground. Silt fencing is intended to retain sediment that has been dislodged by stormwater. It is designed only for runoff from small areas and is not intended to handle flows from large slopes or in areas of concentrated flow. Fiber rolls serve the same purpose and consist of an open mesh tubular sleeve filled with a fibrous material which traps sediment. Fiber rolls are generally staked to the ground.

Installation Tips:

DO:

- Use silt fence or fiber rolls as perimeter controls, particularly at the lower or down slope edge of a disturbed area
- Leave space for maintenance between toe of slope and silt fence or roll
- Trench in the silt fence on the uphill side (6 inches deep by 6 inches wide)
- Install stakes on the downhill side of the fence or roll
- Curve the end of the silt fence or fiber roll up-gradient to help it contain runoff

DON'T:

- Install a silt fence or fiber rolls in ditches, channels, or areas of concentrated flow
- Install it running up and down a slope or hill
- Use silt fencing or fiber rolls alone in areas that drain more than a quarter-acre per 100 feet of fence

Maintenance:

- Remove sediment when it reaches one-third of the height of the fence or one-half the height of the fiber roll
- Replace the silt fence or roll where it is worn, torn, or otherwise damaged
- Retrench or replace any silt fence or roll that is not properly anchored to the ground

ESC Principle 8: Retain sediment on-site and control dewatering practices. Sediment barriers described in ESC Principle 7 can trap sediment from small areas, but when sediment retention from a larger area is required, consider using a temporary sediment trap or sediment basin. These practices detain sediment-laden runoff for a period of time, allowing sediment to settle before the runoff is discharged. Proper design and maintenance are essential to ensure that these practices are effective.

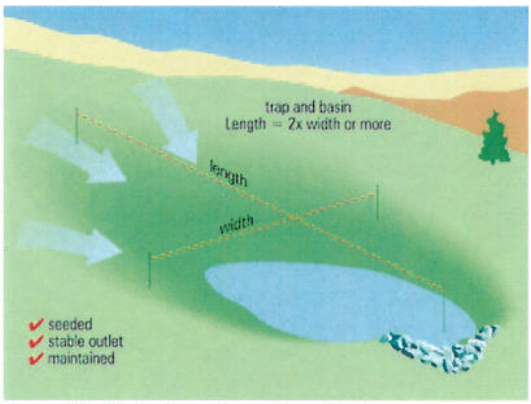


Figure 13. Illustration of a sediment basin.

You should use a sediment basin for common drainage locations that serve an area with 10 or more acres disturbed at any one time. The basin should be designed to provide storage for the volume of runoff from the drainage area for at least a 2-year, 24-hour storm (or 3,600 cubic feet of storage per acre drained, which is enough to contain 1 inch of runoff, if the 2-year, 24-hour calculation has not been performed). Check your permit for exact basin sizing requirements. Sediment basins should be located at low-lying areas of the site and on the down-gradient side of bare soil areas where flows converge. Do not put sediment traps or basins in or immediately adjacent to flowing streams or other waterways.

Where a large sediment basin is not practical, use smaller sediment basins or sediment traps (or both) where feasible. At a minimum, use silt fences, vegetative buffer strips, or equivalent sediment controls for all down-gradient boundaries (and for those side-slope boundaries deemed appropriate for individual site conditions).

Dewatering practices are used to remove ground water or accumulated rain water from excavated areas. Pump muddy water from these areas to a temporary or permanent sedimentation basin or to an area completely enclosed by silt fence in a flat vegetated area where discharges can infiltrate into the ground. Never discharge muddy water into storm drains, streams, lakes, or wetlands unless the sediment has been removed before discharge.

Keep in mind that some states and local jurisdictions require a separate permit for dewatering activities at a site.

ESC Principle 9: Establish stabilized construction exits. Vehicles entering and leaving the site have the potential to track significant amounts of sediment onto streets. Identify and clearly mark one or two locations where vehicles will enter and exit the site and focus stabilizing measures at those locations. Construction entrances are commonly made from large crushed rock. They can be further stabilized using stone pads or concrete. Also, steel wash racks and a hose-down system will remove even more mud and debris from vehicle tires. Divert runoff from wash areas to a sediment trap or basin. No system is perfect, so sweeping the street regularly completes this BMP.

Example BMP: Stabilized Construction Exit

Description: A rock construction exit can reduce the amount of mud transported onto paved roads by vehicles. The construction exit does this by removing mud from vehicle tires before the vehicle enters a public road.

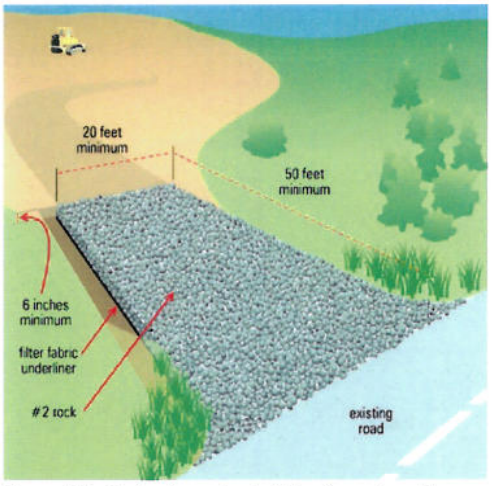


Figure 14. Illustration of a stabilized construction exit.

You might also want to install a wheel wash when mud is especially difficult to remove or space doesn't allow sufficient tire revolutions (four or five are needed) before exiting the site. Direct wash water to a suitable settling area—do not discharge wash water to a stream or storm drain!

Installation tips:

- Ensure that the exit is at least 50 feet long (generally, the length of two dump trucks) and graded so runoff does not enter the adjacent street
- Place a geotextile fabric under a layer of aggregate at least 6–12 inches thick. The stones or aggregate should be 3–6 inches in diameter
- Train employees and subcontractors to use the designated construction exits. Empower your employees to provide directions to subcontractors and others that are not on the site every day

Maintenance:

- Replenish or replace aggregate if it becomes clogged with sediment
- Sweep the street regularly

ESC Principle 10: Inspect and maintain controls. Inspection and maintenance is just as important as proper planning, design, and installation of controls. Without adequate maintenance, erosion and sediment controls will quickly fail, sometimes after just one rainfall, and cause significant water quality problems and potential violations of the NPDES construction general permit. Your permit likely requires you to maintain your BMPs at all times. To do this effectively, you should establish an inspection and maintenance approach or strategy that includes both regular and spot inspections. Inspecting both prior to predicted storm events and after will help ensure that controls are working effectively. Perform maintenance or corrective action as soon as problems are noted. **Inspection and maintenance of BMPs are addressed in more detail in Chapter 6.**

Other Sediment and Erosion Control Techniques

As mentioned at the beginning of this chapter, there are many other erosion and sediment control techniques that can be used effectively. The BMPs highlighted in this chapter are among those more commonly used and highlight many general erosion and sediment control principles for which other BMPs may be used effectively. Check to see if your state or local government has developed a BMP design manual for detailed information on any BMP you are considering. Appendix D lists several good BMP design manuals. You can also find out more about various BMPs by visiting EPA's Menu of BMPs at **www.epa.gov/npdes/menuofbmps**

The following BMPs are also commonly used at construction sites.

Erosion control measures:

- Surface roughening, trackwalking, scarifying, sheepsfoot rolling, imprinting
- Soil bioengineering techniques (e.g., live staking, fascines, brush wattles)
- Composting
- Sodding

Sediment control and runoff management measures:

- Gravel bag barrier
- Compost berm
- Rock or brush filters
- Baffles or skimmers in sediment basins to increase effectiveness
- Lowering soil levels near streets and sidewalks to prevent runoff
- Level spreaders
- Energy dissipaters
- Check dams

Chapter 5: SWPPP Development—Selecting Good Housekeeping BMPs

▶ **This chapter presents a brief discussion of good housekeeping principles to consider to ensure your construction site does not contaminate stormwater runoff.**

As noted in Chapter 3, sediment is the principal pollutant of concern in stormwater discharges from construction sites. But, EPA's CGP and many state construction general permits require that the SWPPP describe good housekeeping measures for other pollutants that might be found on construction sites. This chapter discusses these measures.

Six Key Pollution Prevention Principles for Good Housekeeping

Construction projects generate large amounts of building-related waste, which can end up polluting stormwater runoff if not properly managed. The suite of BMPs that are described in your SWPPP must include pollution prevention (P2) or good housekeeping practices that are designed to prevent contamination of stormwater from a wide range of materials and wastes at your site. The six principles described below are designed to help you identify the pollution prevention practices that should be described in your SWPPP and implemented at your site.

1. Provide for waste management
2. Establish proper building material staging areas
3. Designate paint and concrete washout areas
4. Establish proper equipment/vehicle fueling and maintenance practices
5. Control equipment/vehicle washing and allowable non-stormwater discharges
6. Develop a spill prevention and response plan

P2 Principle 1: Provide for waste management. Design proper management procedures and practices to prevent or reduce the discharge of pollutants to stormwater from solid or liquid wastes that will be generated at your site. Practices such as trash disposal, recycling, proper material handling, and cleanup measures can reduce the potential for stormwater runoff to pick up construction site wastes and discharge them to surface waters.

Figure 15. Illustration showing construction materials with secondary containment and overhead cover to prevent stormwater contamination.

Provide convenient, well-maintained, and properly located toilet facilities. Provide for regular inspections, service, and disposal. Locate toilet facilities away from storm drain inlets and waterways to prevent accidental spills and contamination of stormwater. Treat or dispose of sanitary and septic waste in accordance with state or local regulations.

Proper material use, storage, waste disposal, and training of employees and subcontractors can prevent or reduce the discharge of hazardous and toxic wastes to stormwater. Implement a comprehensive set of waste-management practices for hazardous or toxic materials, such as paints, solvents, petroleum products, pesticides, wood preservatives, acids, roofing tar, and other materials. Practices should include storage, handling, inventory, and cleanup procedures, in case of spills (see the following P2 principles).

Waste Management Checklist

Solid or Construction Waste

- ✓ Designate trash and bulk waste-collection areas on-site
- ✓ Recycle materials whenever possible (e.g., paper, wood, concrete, oil)
- ✓ Segregate and provide proper disposal options for hazardous material wastes
- ✓ Clean up litter and debris from the construction site daily
- ✓ Locate waste-collection areas away from streets, gutters, watercourses, and storm drains. Waste-collection areas (dumpsters, and such) are often best located near construction site entrances to minimize traffic on disturbed soils. Consider secondary containment around waste collection areas to further minimize the likelihood of contaminated discharges.

Sanitary and Septic Waste

- ✓ Provide restroom facilities on-site
- ✓ Maintain clean restroom facilities and empty porta-johns regularly
- ✓ Provide secondary containment pans under porta-johns, where possible
- ✓ Provide tie-downs or stake downs for porta-johns in areas of high winds
- ✓ Educate employees, subcontractors, and suppliers on locations of facilities
- ✓ Do not discharge or bury wastewater at the construction site
- ✓ Inspect facilities for leaks, repair or replace immediately

Hazardous Materials and Wastes

- ✓ Develop and implement employee and subcontractor education, as needed, on hazardous and toxic waste handling, storage, disposal, and cleanup
- ✓ Designate hazardous waste-collection areas on-site
- ✓ Place all hazardous and toxic material wastes in secondary containment
- ✓ Hazardous waste containers should be inspected to ensure that all containers are labeled properly and that no leaks are present

P2 Principle 2: Establish proper building material handling and staging areas.
Your SWPPP should include comprehensive handling and management procedures for building materials, especially those that are hazardous or toxic. Paints, solvents, pesticides, fuels and oils, other hazardous materials or any building materials that have the potential to contaminate stormwater should be stored indoors or under cover whenever possible or in areas with secondary containment. Secondary containment prevents a spill from spreading across the site and include dikes, berms, curbing, or other containment methods. Secondary containment techniques should also ensure the protection of ground water. Designate staging areas for activities such as fueling vehicles, mixing paints, plaster, mortar, and so on. Designated staging areas will help you to monitor the use of materials and to clean up any spills. Training employees and subcontractors is essential to the success of this pollution prevention principle.

SWPPP Tip!

Material Staging Area Measures

Your SWPPP should include procedures for storing materials that can contribute pollutants to stormwater. Consider the following:

- Train employees and subcontractors in proper handling and storage practices
- Designate site areas for storage. Provide storage in accordance with secondary containment regulations and provide cover for hazardous materials when necessary. Ensure that storage containers are regularly inspected for leaks, corrosion, support or foundation failure, or any other signs of deterioration and tested for soundness
- Reuse and recycle construction materials when possible

P2 Principle 3: Designate washout areas.
Concrete contractors should be encouraged, where possible, to use the washout facilities at their own plants or dispatch facilities. If it is necessary to provide for concrete washout areas on-site, designate specific washout areas and design facilities to handle anticipated washout water. Washout areas should also be provided for paint and stucco operations. Because washout areas can be a source of pollutants from leaks or spills,

EPA recommends that you locate them at least 50 yards away from storm drains and watercourses whenever possible.

Several companies rent or sell prefabricated washout containers, and some provide disposal of waste solids and liquids along with the containers. These prefabricated containers are sturdy and provide a more reliable option for preventing leaks and spills of wash water than self-constructed washouts. Alternatively, you can construct your own washout area, either by digging a pit and lining it with 10 mil plastic sheeting or creating an aboveground structure from straw bales or sandbags with a plastic liner. If you create your own structure, you should inspect it daily for leaks or tears in the plastic because these structures are prone to failure.

Regular inspection and maintenance are important for the success of this BMP. Both self-constructed and prefabricated washout containers can fill up quickly when concrete, paint, and stucco work are occurring on large portions of the site. You should also inspect for evidence that contractors are using the washout areas and not dumping materials onto the ground or into drainage facilities. If the washout areas are not being used regularly, consider posting additional signage, relocating the facilities to more convenient locations, or providing training to workers and contractors.

SWPPP Tip!

Washout Area Measures

When concrete, paint, or stucco is part of the construction process, consider these practices which will help prevent contamination of stormwater. Include the locations of these areas and your maintenance and inspection procedures in your SWPPP.

- Do not washout concrete trucks or equipment into storm drains, streets, gutters, uncontained areas, or streams
- Establish washout areas and advertise their locations with signs
- Provide adequate containment for the amount of wash water that will be used
- Inspect washout structures daily to detect leaks or tears and to identify when materials need to be removed
- Dispose of materials properly. The preferred method is to allow the water to evaporate and to recycle the hardened concrete. Full service companies may provide dewatering services and should dispose of wastewater properly. Concrete wash water can be highly polluted. It should not be discharged to any surface water, storm sewer system, or allowed to infiltrate into the ground. It should not be discharged to a sanitary sewer system without first receiving written permission from the system operator

P2 Principle 4: Establish proper equipment/vehicle fueling and maintenance practices. Performing equipment/vehicle fueling and maintenance at an off-site facility is preferred over performing these activities on the site, particularly for road vehicles (e.g., trucks, vans). For grading and excavating equipment, this is usually not possible or desirable. Create an on-site fueling and maintenance area that is clean and dry. The on-site fueling area should have a spill kit, and staff should know how to use it. If possible, conduct vehicle fueling and maintenance activities in a covered area; outdoor vehicle fueling and maintenance is a potentially significant source of stormwater pollution. Significant maintenance on vehicles and equipment should be conducted off-site.

SWPPP Tip!

Equipment/Vehicle Fueling and Maintenance Measures

Consider the following practices to help prevent the discharge of pollutants to stormwater from equipment/vehicle fueling and maintenance. Include the locations of these areas and your inspection and maintenance procedures in your SWPPP.

- Train employees and subcontractors in proper fueling procedures (stay with vehicles during fueling, proper use of pumps, emergency shut-off valves, and such)
- Inspect on-site vehicles and equipment daily for leaks, equipment damage, and other service problems
- Clearly designate vehicle/equipment service areas away from drainage facilities and watercourses to prevent stormwater run-on and runoff
- Use drip pans, drip cloths, or absorbent pads when replacing spent fluids
- Collect all spent fluids, store in appropriate labeled containers in the proper storage areas, and recycle fluids whenever possible

P2 Principle 5: Control equipment/vehicle washing and allowable non-stormwater discharges. Environmentally friendly washing practices can be practiced at every construction site to prevent contamination of surface and ground water from wash water. Procedures and practices include using off-site facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water or routing to the sanitary sewer; and training employees and subcontractors in proper cleaning procedures.

Take a Closer Look...

Non-Stormwater Runoff

A construction site might have sources of runoff that are not generated by stormwater. These non-stormwater discharges include fire hydrant flushing, vehicle or equipment wash water (no detergents!), water used to control dust, and landscape irrigation.

What does this mean to me?

Take steps to infiltrate these sources of uncontaminated water into the ground. You can also route these sources of water to sediment ponds or detention basins or otherwise treat them with appropriate BMPs.

SWPPP Tip!

Equipment/Vehicle Washing Measures

The following equipment/vehicle washing measures will help prevent stormwater pollution. Include the location of your washing facilities and your inspection and maintenance procedures in your SWPPP.

- Educate employees and subcontractors on proper washing procedures
- Clearly mark the washing areas and inform workers that all washing must occur in this area
- Contain wash water and treat and infiltrate it whenever possible
- Use high-pressure water spray at vehicle washing facilities without any detergents because water can remove most dirt adequately
- Do not conduct any other activities, such as vehicle repairs, in the wash area

P2 Principle 6: Develop a spill prevention and response plan. Most state and EPA construction general permits require the preparation of spill prevention and response plans. Generally, these plans can be included or incorporated into your SWPPP. The plan should clearly identify ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and response. The plan should also specify material handling procedures and storage requirements and ensure that clear and concise spill cleanup procedures are provided and posted for areas in which spills may potentially occur. When developing a spill prevention plan, include, at a minimum, the following:

- Note the locations of chemical storage areas, storm drains, tributary drainage areas, surface waterbodies on or near the site, and measures to stop spills from leaving the site
- Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or municipal sewage treatment facilities to request assistance
- Describe the procedures for immediate cleanup of spills and proper disposal
- Identify personnel responsible for implementing the plan in the event of a spill

SWPPP Tip!

Spill Prevention Measures

Additional spill prevention measures that will help prevent spills and leaks include the following:

- Describe and list all types of equipment to be used to adequately clean up the spill
- Provide proper handling and safety procedures for each type of waste
- Establish an education program for employees and subcontractors on the potential hazards to humans and the environment from spills and leaks
- Update the spill prevention plan and clean up materials as changes occur to the types of chemicals stored and used at the facility

Take a Closer Look...

Spill Prevention, Control and Countermeasure (SPCC) Plan

Construction sites may be subject to 40 CFR Part 112 regulations that require the preparation and implementation of a SPCC Plan to prevent oil spills from aboveground and underground storage tanks. Your facility is subject to this rule if you are a nontransportation-related facility that:

- Has a total storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons and
- Could reasonably be expected to discharge oil in quantities that may be harmful to navigable waters of the United States and adjoining shorelines

Furthermore, if your facility is subject to 40 CFR Part 112, your SWPPP should reference the SPCC Plan. To find out more about SPCC Plans, see EPA's website on SPPC at **www.epa.gov/oilspill/spcc.htm**

What does this mean to me?

Reporting Oil Spills

In the event of an oil spill, you should contact the National Response Center toll free at 1-800-424-8802 for assistance, or for more details, visit their website: ***www.nrc.uscg.mil/nrchp.html***

Appendix K

Reference Documents

Construction SWPPP Reference Documents

Document	Title	Website/Update Information
General Construction Permit	National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08-DWQ, NPDES No. CAS000002) issued by the State Water Resources Control Board	http://www.swrcb.ca.gov/stormwtr/construction.html Once at the site click on the highlighted link titled "Construction General Permit, 99-08-DWQ". An update to the 99-08 Order is under consideration
General Linear Utility Permit	NPDES General Permit for Storm Water Discharges Associated with Construction Activity from Small Linear Underground/Overhead Projects, Water Quality Order No. 2003-0007 issued by the State Water Resources Control Board	http://www.swrcb.ca.gov/stormwtr/construction.html Once at the site click on the highlighted link titled "Small LUP General Permit".
EPA Guide for Construction Sites	Environmental Protection Agency (EPA) Developing Your Stormwater Pollution Prevention Plan – A Guide for Construction Sites EPA 833-R-060-04 May 2007	http://www.epa.gov/npdes/swpppguide
CASQA Construction Handbook	California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook Construction January 2003	http://www.cabmphandbooks.com Click on Construction. Also check for Errata Sheets
Caltrans Construction Site BMP Manual	California Department of Transportation (Caltrans) Stormwater Quality Handbook - Construction Site Best Management Practices March 1, 2003	http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm
Caltrans SWPPP/WPCP Preparation Manual	California Department of Transportation (Caltrans) Stormwater Quality Handbook - Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual – Construction Site Best Management Practices (BMPs) Reference Manual March 2007	http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

For a more complete listing of additional references and suggested resources on storm water pollution prevention planning, see the Suggested Resources List attached as Appendix D to Section 2 (Standard Urban Storm Water Mitigation Plan) included in the City of Carlsbad Storm Water Standards Manual.